July 30, 1956

What's the Life of a Diesel? . . . p.22

RAILWAY AGE

WORKBOOK OF THE RAILWAYS

THE INDUSTRY'S ONLY WEEKLY NEWSMAGAZINE

More "Get Up and Go" on the Wabash

. . . another Dieselized road adds more Diesels

It's not too surprising that the Wabash selected the General Motors GP9 for the job of speeding up transfer hauls and reducing elapsed time on local freight runs. Taking over from 1000- and 1200-hp switchers, these 1750-hp general purpose units pack the necessary "get up and go" for faster metropolitan and local freight service.

Faster service must also be dependable, day in, day out. That's where the General Motors GP9 has proven itself—on one railroad after another. Its record of millions of ton-miles is your best guarantee of improved service.

Electro-Motive Division · GENERAL MOTORS

LA GRANGE, ILLINOIS • *HOME OF THE DIESEL LOCOMOTIVE*

In Canada: General Motors Diesel, Ltd., London, Ontario

For proof of wheel performance

LOOK UNDER YOUR CARS

Stamped on the back of the rim of each Armco One-Wear Wrought Steel Wheel you'll find the date it was made. Check this date for proof of service.

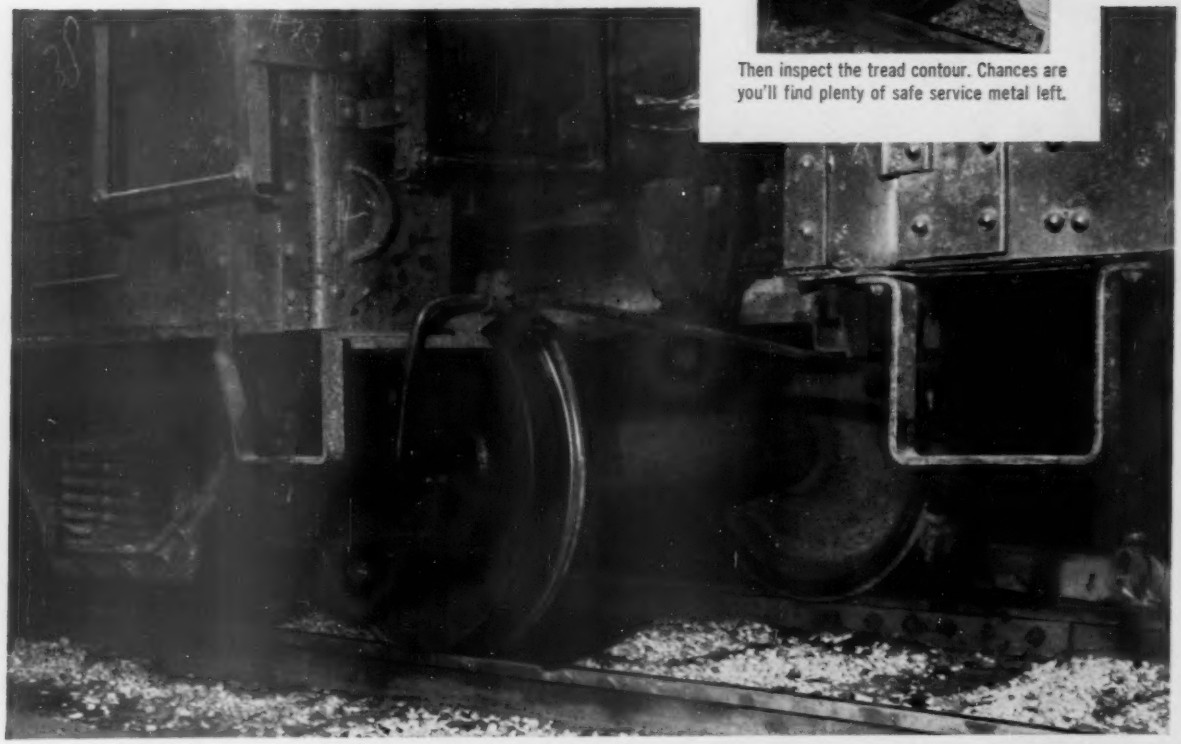
Most Armco One-Wear Wrought Steel Wheels deliver more than 15 years of normal service. Many serve much longer. Want proof? *Just look under your cars.*

Stretch Dollars

Only forged and rolled wheels stretch your wheel dollars over so many service miles. But extra service life isn't all you get with Armco One-Wear Wrought Steel Wheels. They're tough—safe and dependable. They need practically no maintenance. Freight moves fast and shippers stay happy. What's more, a slid-flat can often be machined out and the wheel returned to service.

For more information about service-proved Armco One-Wear Wrought Steel Wheels, contact our nearest sales office or write us at the address below.

Then inspect the tread contour. Chances are you'll find plenty of safe service metal left.



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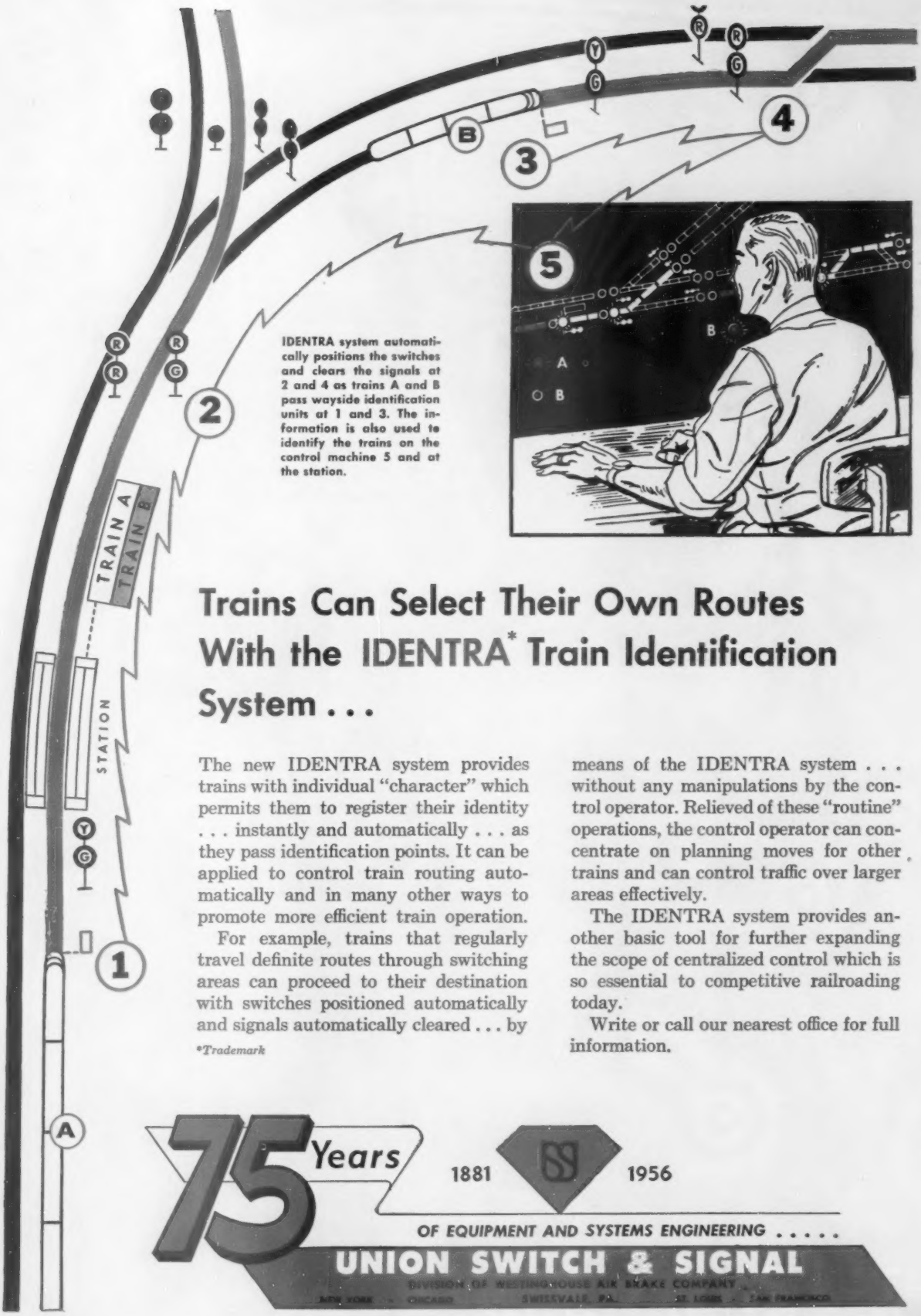

IDENTRA system automatically positions the switches and clears the signals at 2 and 4 as trains A and B pass wayside identification units at 1 and 3. The information is also used to identify the trains on the control machine 5 and at the station.

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The IDENTRA system provides another basic tool for further expanding the scope of centralized control which is so essential to competitive railroading today.

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SUBSCRIPTION TO RAILROAD EMPLOYEES ONLY IN U. S., U. S. POSSESSIONS, CANADA AND MEXICO, $4 ONE YEAR, $6 TWO YEARS, PAYABLE IN ADVANCE AND POSTAGE PAID. TO RAILROAD EMPLOYEES ELSEWHERE IN THE WESTERN HEMISPHERE, $10 A YEAR; IN OTHER COUNTRIES, $15 A YEAR—TWO-YEAR SUBSCRIPTIONS DOUBLE ONE-YEAR RATE. SINGLE COPIES 50c. EXCEPT SPECIAL ISSUES. CONCERNING SUBSCRIPTIONS WRITE R. C. VAN NESS, CIRCULATION DIRECTOR, 30 CHURCH ST., NEW YORK7.

Workbook of the Railways

Vol. 141, No. 5
July 30, 1956

CONTENTS and

Week at a Glance

Industry turns to the railroads . . .

. . . when it seeks new plant locations, relying on the roads to serve as "researchers" into many subjects, including availability of competing forms of transport. ERPC Chairman Mackie highlighted this increasingly important rail service in a speech at St. Louis July 24. . . . p.7

Use of full costs in fixing . . .

. . . competitive rates is insisted upon by the ICC, which has advised the House Interstate Commerce Committee that a carrier should not be permitted to put charges on an out-of-pocket basis to deprive shippers of the service of other carriers with lower full costs. . . . p.8

FORUM: Selective rate changes . . .

. . . aren't at all irreconcilable with "across the board" increases that have to be made from time to time to meet general cost increases—such as higher material prices or wage hikes. The industry-wide change is an emergency measure, required to meet an immediate revenue need, while the "tailored" rate, based on cost studies and market analyses, is a device to meet specific competitive situations. . . . p.21

What's the life of a diesel? . . .

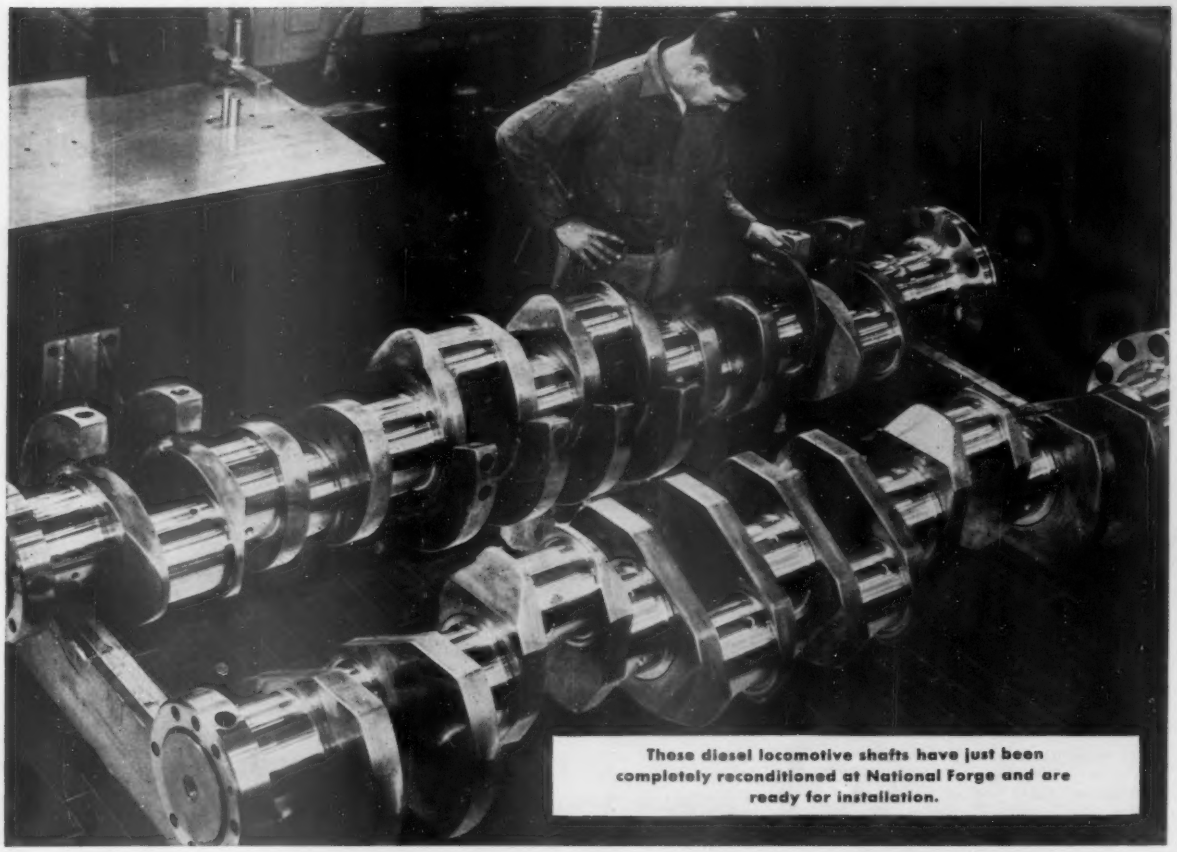
. . . The answer, developed by relatively simple mathematics, comes out somewhat surprisingly to as short a period as 14 years—even less for some circumstances. Our contributor suggests that the railroads should prevail on the regulatory and taxing authorities to recognize this situation with more realistic depreciation formulas. . . . p.22

Roller bearings on freight cars . . .

. . . will pay their way, says a new Timken study which shows an annual return of some 19% on the roller bearing investment, based on average performance of 16,200 car-miles per year per car. . . . p.26

A "custom-tailored" crane . . .

. . . which does the work of several specialized machines, on track and off track, is a handy thing to have around, say the Reading's maintenance people. . . . p.30



These diesel locomotive shafts have just been completely reconditioned at National Forge and are ready for installation.

RECONDITIONING DIESEL LOCOMOTIVE SHAFTS

● National Forge has been well recognized as a supplier of quality crankshafts for original equipment for over forty years. Through these years we have kept abreast of the steadily increasing demands for greater quality and workmanship.

Now this experience and "know how" have been applied to the problem of reconditioning worn crankshafts. National Forge has established a complete and separate department for this rebuilding which includes a newly developed chromium plating process and facilities for straightening, grinding and polishing.

National Forge offers you this complete rebuilding service for your worn crankshafts. We will be pleased to have your inquiries and will be glad to have our field representatives discuss this service with you.

NATIONAL FORGE AND ORDNANCE COMPANY

PRODUCES BETTER STEEL FORGINGS AND MACHINE WORK

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Current Statistics

Operating revenues, five months	
1956	$4,338,808,871
1955	3,956,975,949
Operating expenses, five months	
1956	$3,354,150,312
1955	3,007,441,074
Taxes, five months	
1956	$462,347,727
1955	421,778,876
Net railway operating income, five months	
1956	$415,532,086
1955	423,676,314
Net income, estimated, five months	
1956	$322,000,000
1955	328,000,000
Average price 20 railroad stocks	
July 24, 1956	105.89
July 26, 1955	96.66
Carloadings revenue freight	
Twenty-eight weeks, 1956	20,025,697
Twenty-eight weeks, 1955	19,323,224
Average daily freight car surplus	
Wk. ended July 21, 1956	27,796
Wk. ended July 23, 1955	5,444
Average daily freight car shortage	
Wk. ended July 21, 1956	3,157
Wk. ended July 23, 1955	15,238
Freight cars on order	
July 1, 1956	129,409
July 1, 1955	27,102
Freight cars delivered	
Six months, 1956	33,189
Six months, 1955	17,111
Average number railroad employees	
Mid-June 1956	1,074,979
Mid-June 1955	1,073,847

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Week at a Glance CONTINUED

BRIEFS

Steel strike settlement . . .

. . . details were being buttoned up as this issue went to press. Trade circles considered an announcement of substantial steel price increases to be imminent.

First-class fare increase . . .

. . . of 33 to 50% has been proposed to eastern passenger-carrying railroads by the Pennsylvania and New York Central, and the proposal is under discussion. If effected, such an increase would make the New York-Chicago first-class rail fare, including Pullman charge, almost double the present first-class air line fare.

Reparations cases won't be appealed . . .

. . . to the courts by the federal government. The cases involved 17 complaints whereby the government sought to recover alleged overcharges which it claimed railroads assessed on its shipments during World War II. The ICC dismissed the complaints last year. Amount involved in the reparations claims has been estimated as high as $2 billion, but the official guess of the Justice Department put it at "about $475 million."

Per diem rate . . .

. . . is under study by AAR Mechanical Division. A report, which may recommend change in the present car rental charge of $2.40 per day, is due in the near future. Meanwhile, Senator Magnuson, chairman of the Senate Interstate Commerce Committee, has suggested to AAR President W. T. Faricy that increased demurrage charges, now published to become effective September 1, be delayed until a decision is made on the per diem rate.

Benefits under the Railroad Retirement Act . . .

. . . will be increased by 10% if President Eisenhower approves legislation passed by Congress last week. There would be no increases in the payroll taxes which support the retirement system. Congress acted after the House Ways and Means Committee refused to approve a more liberal proposal calling for a 15% increase in benefits and exclusion of payroll taxes paid by railroad employees from their taxable income.

MORE ECONOMIES AHEAD

with Standard Solid Bearing Assemblies

Why and how elimination of "loose" waste and adoption of "controlled clearance" bearings will still further increase economic advantages of low cost Solid Bearings

YOU SAVE real money now with standard solid bearing assemblies. And soon you'll be saving even more—for two big reasons.

First, there's the program now in force to equip freight cars with "controlled clearance" bearings—standard bearings with finished bore diameters much closer to journal diameters on which they operate. You get a big extra margin of safety during initial run-in periods, and the time for run-in is greatly reduced. Right at the start the bearing load is distributed over a wide area. That's going to greatly increase bearing life.

Second, there's the program now under way to eliminate "loose" waste—either by using approved pad or mechanical lubricators, or by using an approved device to contain the lubricator—such as the R-S Journal Stop that performs the dual function of eliminating excessive axle displacement at the same time that it anchors the lubricator (whether waste or not) firmly in position.

As soon as "loose" waste is eliminated, you'll see a big drop in routine servicing costs and another big jump in bearing performance. Three year periods between detailed bearing inspection are in prospect, too—you'll halve those costs for periodic attention.

There's no question about it. Solid bearings save you money now, and they'll save you more in the future. Then, too, you'll still have all the inherent advantages which solid bearings bring to railroad rolling stock. You can take the maximum load, make the fastest schedule. You save in unsprung dead weight, and you get the smoothest ride on any freight car truck. Best of all, you'll get top bearing performance at the lowest possible cost. Magnus Metal Corporation, 111 Broadway, New York 6; or 80 E. Jackson Blvd., Chicago 6, Illinois.

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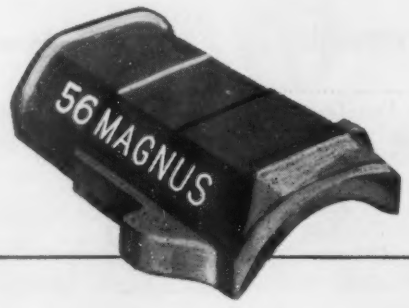
Solid Bearings



MAGNUS METAL CORPORATION

Subsidiary of **NATIONAL LEAD COMPANY**

CHOOSING SITES FOR EXPANSION . . .

Industry Turns to the Railroads

It's a far cry from the strict "transportation" job of moving freight in trains, but the railroad service of finding new plant locations is increasingly important in this era of industrial dispersal and expansion.

David I. Mackie, chairman, Eastern Railroad Presidents Conference, stressed this July 24 in an address to the Advertising Club of St. Louis when he declared that railroads are "often" given the job of "being the 'researcher' in such diverse matters as taxes, utilities, labor supply, school and housing facilities, raw material sources and so forth."

Knowledge of the service given by the railroads, Mr. Mackie said, "has resulted in industries taking them into their confidence in the early stages of selecting new plant sites."

Unique Role—"As far as I can determine," Mr. Mackie stated, "railroads are the only non-governmental or non-realty group in this nation which goes about this long and costly job of buying up bits and pieces of property to assemble large tracts of land so that important industry may have plant sites available when needed.

"Certainly," he continued, "no other form of transportation performs this basic development task."

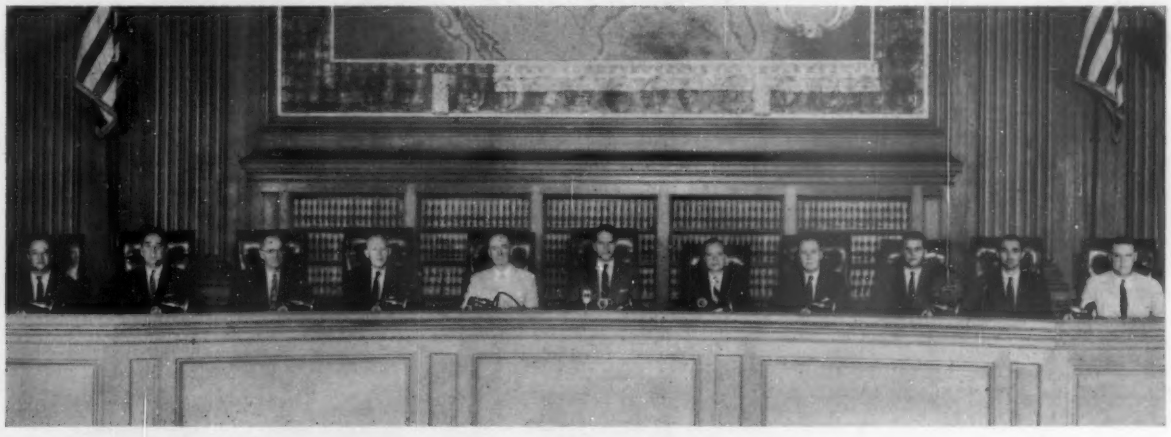
Despite this, he went on, in accepting their advisory position, railroads "must and do survey with great objectivity the availability and rates of other forms of transportation, for, while an industry may often rely on rails for the greatest amount of its transportation needs, the services of trucks or water carriers are often equally important."

The ERPC president noted that in 1954 and 1955 $200,000,000 had been invested in St. Louis in new manufacturing and distributing facilities. "Railroad men, working with your Chamber of Commerce and others," he said, "had a hand in the majority" of the 153 projects involved.

Common Procedure—"It is the usual practice," Mr. Mackie said, "for the industrial development department of a railroad to offer a prospective new industry the choice of a number of plant locations along its line." He cited as an example the Missouri Pacific acquiring options from area property owners to form a 100-acre site for a new plant of the Dow Chemical Company at St. Louis.

The Wabash did a similar job assembling 600 acres of land, Mr. Mackie asserted, "and has developed a beehive of industrial activity by its sale of more than half of the acreage to expanding national, as well as local, heavy and light industry."

"As you well know," he told the



Here's the Lineup of the Commission in its Latest Photograph

Several new faces appear in this most recent group photograph of the Interstate Commerce Commission. More than half the present commissioners had not been sworn in just over two years ago, and all but two of the men now serving are appointees of President Eisenhower. Commissioners Mitchell and Arpaia alone predate the incumbent administration. Posed in ICC hearing room at Washington, the commissioners are (left to right): Laurence K. Walrath, Rupert L. Murphy, John H. Winchell, Howard G. Freas, Richard F. Mitchell, Anthony F. Arpaia (chairman), Owen Clarke, Kenneth H. Tuggle, Everett Hutchinson, Robert W. Minor and Donald P. McPherson, Jr.

St. Louis advertising executives, "the key to heavy industry development within an area is the availability of sizeable parcels of vacant, appropriately zoned land. On that score much more must be done if St. Louis is to continue to win for itself the industry which would normally be attracted here by all your other attributes."

It is in this connection, Mr. Mackie suggested, that the services of railroads in finding desirable sites and providing other research information to prospective industries might best be used.

Other Considerations—Noting it had been reported that eight out of ten industrial traffic departments are influential in the matter of selecting plant locations, Mr. Mackie said that "transportation is becoming less and less the prime consideration," because monopoly conditions no longer prevail and because freight costs are "generally one of the lowest component costs in industrial production today." Labor costs, he said, generally are the biggest factor in selecting plant sites.

"Technological advances" and the lag of railroad freight rates behind rising costs, Mr. Mackie said, caused the ratio of freight charges to the value of goods transported by railroads to decline from 7.9% in 1929 to 4.6% in 1953.

In the face of this, he asserted, St. Louis residents ought to recognize two factors which threaten "railroad prosperity" and its ability to continue to serve the community: competition-stifling legislation, and inequitable use of tax money.

"We think we have a case," he asserted, "when our taxes are used to pay for the new terminal facilities of our competitors—the airlines—while we must continue, out of our own pockets, to operate, maintain and pay taxes on our station."

"Also, we railroad men think we have a case when it is planned to use $2½ million of [municipal funds] to provide docks, wharves and warehouses for our water carrier competitors, unless compensatory user charges are required to be paid. We submit that those user charges must in all reason and fairness include payment of current operating expenses, interest and eventual amortization of principal, as well as a fair contribution to taxes.

"The railroad industry does not object to use of government funds for provision of various facilities used by our competitors, so long as appropriate user charges are imposed, but we do balk at such . . . gifts, partly at our expense, to our competition."

ICC Insists on Full Costs for Rate Fixing

Advises House Interstate Commerce Committee that a carrier should not be permitted to put charges on an out-of-pocket basis for purpose of "depriving shippers of service of other carriers with lower full costs"

The Interstate Commerce Commission has come out flatly for use of full costs in the fixing of competitive rates. It has also indicated its view that railroads will often fail to qualify as low-cost carriers on that basis.

The commission's position was set out in a supplemental statement in opposition to the railroads' rate-freedom program, which it filed with the House Interstate Commerce Committee.

The rate-freedom program was among recommendations of President Eisenhower's Cabinet Committee on Transport Policy.

It calls for addition to the Interstate Commerce Act of provisions which have become known as the "three shall-nots." They would prevent the ICC from considering the effect of a proposed rate on a competing form of transportation.

Rate Maker—"The low-cost form of transportation (all costs considered should normally be the rate-making form," the commission said. "Within reason, other carriers should be permitted to meet the rates of the low-cost carrier."

The commission led up to these pronouncements with references to "authorities" which "agree" that the fixed portion of total rail expenses "is approximately twice as great as the corresponding costs of motor carriers." The commission added:

"It follows that the ratio of out-of-pocket costs or direct costs to total rail expenses is considerably smaller than the ratio of out-of-pocket costs to total motor carrier expenses. Thus, we have innumerable situations where the carrier with the higher total costs will have the lower direct costs, and vice versa."

Of the "three shall nots," the commission said they "would leave high-cost carriers entirely free to establish rates approximating their out-of-pocket costs for the sole purpose of capturing all of the traffic of competitors which have lower full costs, but higher out-of-pocket costs." The commission went on to "put it bluntly," saying the proposed amendment would, "in many instances, enable railroads to drive other forms of transportation out of business."

Asserting that rates of victors in competitive struggles do not long remain on the depressed competitive level, the commission pointed out that, indeed, no transport agency could operate on an out-of-pocket basis. "Accordingly," it added, "a carrier should not be permitted to reduce its rates to an out-of-pocket level for the purpose, or with the probable result, of depriving shippers of the service of other carriers with lower full costs. To avoid that result, consideration of the effect of the rates upon other forms of transportation is essential."

Amplifying Opportunity's Knock—Meanwhile, the commission denied that it is apportioning traffic among competing modes of transportation. It does try to see that shippers are afforded "a choice of transportation services at the lowest rates which are consistent with efficient service"; and it thinks that "all carriers should have an *opportunity* to render competitive service with a maximum of rate-making freedom but with restraints against rates which would be mutually destructive as between modes of transport, or within any particular mode, to public detriment."

(Continued on page 10)

RAILWAY MARKET OUTLOOK THIS WEEK

a RAILWAY AGE Workbook Page

Carloadings Up.—Loadings of revenue freight in the week ended July 21 totaled 648,492 cars, the Association of American Railroads announced on July 26. This was an increase of 28,500 cars, or 4.6%, compared with the previous week; a decrease of 133,416 cars, or 17.1%, compared with the corresponding week last year; and a decrease of 35,789 cars, or 5.2%, compared with the equivalent 1954 week.

Loadings of revenue freight for the week ended July 14 totaled 619,988 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CAR LOADINGS
For the week ended Saturday, July 14

District	1956	1955	1954
Eastern	103,226	132,666	111,579
Allegheny	98,968	158,501	127,503
Pocahontas	49,005	62,001	49,880
Southern	117,216	121,232	111,809
Northwestern	71,346	132,851	116,818
Central Western	121,820	126,727	119,536
Southwestern	58,407	60,160	57,420
Total Western Districts	251,573	319,738	293,774
Total All Roads	619,988	794,138	694,545
Commodities:			
Grain and grain products	66,337	74,617	69,858
Livestock	6,622	6,388	7,110
Coal	106,550	135,244	108,880
Coke	3,904	11,617	6,684
Forest Products	45,714	44,294	38,108
Ore	19,807	86,994	73,121
Merchandise l.c.l.	55,434	65,797	58,286
Miscellaneous	315,620	369,187	332,498
July 14	619,988	794,138	694,545
July 7	478,297	648,992	569,562
June 30	755,292	695,841	618,559
June 23	799,461	794,427	713,160
June 16	801,431	779,957	707,237
Cumulative total, 28 weeks	20,025,697	19,323,224	17,765,933

In Canada.—Carloadings for the seven-day period ended July 7 totaled 81,684 cars, compared with 119,451 cars for the previous nine-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
July 7, 1956	81,684	30,482
July 7, 1955	72,594	27,152
Cumulative Totals:		
July 7, 1956	2,183,840	924,451
July 7, 1955	1,964,776	837,670

New Equipment

FREIGHT-TRAIN CARS

► *Columbus & Greenville.*—Ordered 100 50-ton box cars, Pullman-Standard; approximate unit cost $7,000; delivery expected fourth quarter 1957.

► *Florida East Coast.*—Ordered additional 100 70-ton gondola cars, Magor Car Corporation; approximate cost $715,000; delivery originally scheduled for third quarter 1956, now anticipated before end of year.

► *Genesee & Wyoming.*—Ordered one caboose, International Railway Car Company; estimated cost $13,900; delivery expected last quarter 1956.

SPECIAL

► *Great Northern.*—Ordered 25 air dump cars, Baldwin-Lima-Hamilton.

PASSENGER-TRAIN CARS

► *Hudson & Manhattan-Pennsylvania.*—Will request bids for 50 new air-conditioned cars to be used on joint Newark, N.J.-Hudson Terminal, New York run; decision to request bids followed recent agreements with state and municipal authorities to reduce H&M taxes (see page 12).

Maintenance Expenditures

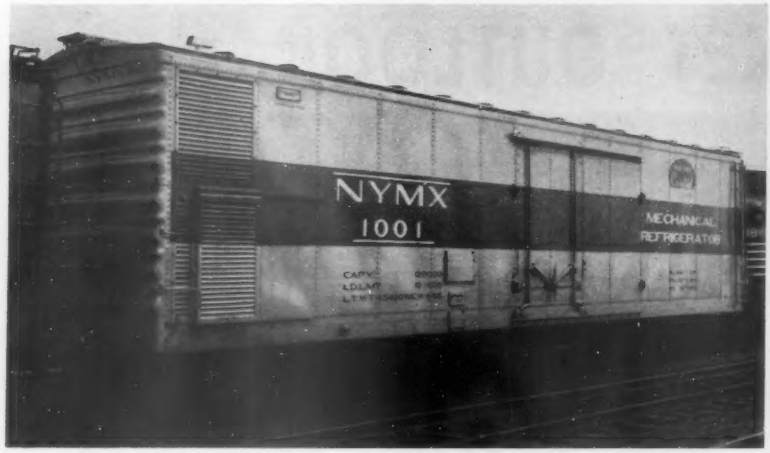
► *Up 10.9% in April.*—Expenditures by Class I roads for maintenance of equipment, way and structures were $27.9 million, or 10.9%, higher last April than in April 1955, ICC Bureau of Transport Economics & Statistics said in report summarized below:

	April '56	April '55	% Change
Maintenance of Way & Structures	$118,846,848	$108,834,908	+ 9.2
Maintenance of Equipment	159,857,803	141,963,680	+12.6
Totals	278,704,651	250,798,588	+10.9

New Facilities

► *Baltimore & Ohio.*—Constructing 700-ft by 300-ft steel-and-masonry fruit pier on south side of Locust Point in Baltimore harbor; approximate cost $4,000,000; pier will accommodate over 50 railroad cars; fruit unloading equipment, of special design, will permit maximum speed and damage-free handling of bananas and other fruit.

► *Southern Pacific.*—Cut $7 million two-way traffic control system extending 114 miles from Indio, Cal., to Yuma, Ariz., into operation June 29; expected to increase traffic capacity on single-track main line by 75%, installation features 16 sidings of 9,000 or more feet each to permit 125-car trains to pass opposing trains without stopping.



First of 50 New Reefers for NY Central

Built for New York Central's Merchants Despatch subsidiary by Pacific Car & Foundry, this is the first of 50 mechanical refrigerators scheduled to enter service this year. Through use of 34-hp diesel engine, car temperature can be maintained within 10-below and 70-above range. Cars cost $23,000 each and are equipped with roller bearings.

(Continued from page 8)

Aside from its effect on the supply of competitive transport facilities, the proposed legislation, the commission said, would have "far reaching consequences in other respects." Proponents of the "three shall nots," the commission insisted, minimize the difficulties it would encounter "in protecting shippers and communities from unjust discrimination and undue prejudice and preference." The proposed legislation, the commission continued, "would jeopardize many rate relationships . . . which are the foundation of our marketing and distribution system."

No Protection—The commission rejected contentions that enactment of the "three shall nots" would leave the public amply protected against discrimination. "Overlooked," it said, "is the fact that sections 2 and 3 are not self-executing; they merely *declare* unlawful, unjust discrimination and undue prejudice and preference. These sections are given force and effect through section 15(1). . . . Our powers under section 15(1) would become ineffectual if the three 'shall nots' were adopted."

The commission proceeded to express its general view that criticisms of its administration of the Interstate Commerce Act have involved "much over-simplification." It called transportation "too critical a factor in the national economy to be subjected to the degree of license contemplated by the 'shall nots.'" And it went on to say that "there already exists ample competition between carriers."

There are other ways to assist the carriers, "without the gamble the country is now being asked to take," the commission continued. It identified "the constant erosion of traffic which properly should be handled by common carriers or regulated carriers" as the "major source of the problems of public transportation." And it cited actions of federal government agencies as contributing factors in the weakening of the for-hire transportation system.

In the latter connection, the commission had in mind the government's role as the largest single purchaser of transportation, which it buys largely at unregulated section 22 quotations, the "continual expansion of exempt commodities and exempt carriers," and the continuance of the tax on for-hire transportation which promotes the growth of untaxed private transportation.

In closing, the commission said that transport regulation is now "accomplishing its broad objectives." While it did not contend the regulatory laws could not be improved, it did have this to say:

"On the whole, the transportation system of the country is in reasonably sound condition. Coordinated services are being promoted, technical innovations and improvements in service are being effectuated, and rates are as reasonable and as free from unjust discrimination as could be expected. All of this is being done under a system of private ownership which makes large tax payments . . . rather than under government ownership and at a deficit, as in most other countries."

The commission's statement was in the form of a letter from its chairman, Commissioner Anthony F. Arpaia, to the chairman of the House committee—Representative J. Percy Priest, Democrat of Tennessee. It will go into the record of hearings held on bills to implement the Cabinet Committee recommendations. The hearings closed June 20, and the committee subsequently decided to take no action on the bills during the present Congress (Railway Age, June 25, p. 8 and July 9, p. 5).

Bad-Order Ratio at 9½-Year Low

The ratio of bad-order freight cars to total ownership on Class I railroads fell to 3.9% as of July 1, the first time it had been under 4% since January 1947.

This was reported by Chairman A. H. Gass of the Car Service Division, Association of American Railroads, in his latest monthly review of the "National Transportation Situation." Mr. Gass also pointed out that the 3.9% ratio "marks achievement of the railroads' announced goal" of reducing the bad-order ratio to 4%.

The serviceable fleet of the Class I roads and their car-line affiliates totaled 1,711,941 cars on July 1, the CSD chairman noted. This was an increase of 4,452 cars above the June 1 total, and 19,107 cars above the total for July 1, 1955.

Mr. Gass' data on freight car performance indicated average output of 1,037 net ton-miles per serviceable car per day in April. That compared with a March average of 1,027 net ton-miles, and with an April 1955 average of 971 net ton-miles.

Post Office Still Wants Mail Pay Tied to Express

The Postmaster General's answer to the petition of eastern railroads for an increase in mail pay embodies a proposal that railroad charges for the transportation of mail other than first class be tied to what the rail-

roads get for transporting express.

The answer, filed with the Interstate Commerce Commission, asks generally that the proposed increase be denied and that present rates of mail pay be found excessive. The eastern roads claimed they were losing money on the mail business and asked the commission to fix rates that will "reflect the full cost" of the service (Railway Age, July 9, page 5).

The proposed tie to express is based on the Post Office Department's contention that the Mail Pay Act of 1916 gives it the right to have rates for non-first-class mail fixed at parity with express privilege payments received by the railroads from the Railway Express Agency. That contention was rejected by the commission when it was raised in the latest previous mail-pay case.

The commission then held, in effect, that there are now no railroad rates on express matter within the meaning of the 1916 law. The commission subsequently refused to reconsider that determination (Railway Age, August 20, 1949, p. 69, and February 18, 1950, p. 70).

Monon's "Young Men" To Make Industry Study

Warren Brown, president of the Monon, announced last week the formation of a "Young Men's Committee," consisting of 13 company officers, which will "explore ways and means in which the Monon and the rest of the railroad industry can do a better job."

"It's no secret that I am extremely unhappy with the Monon's results for the first six months of this year, and I'm not pleased with the general direction in which the railroad industry seems to be heading," Mr. Brown said. He charged the new group with the responsibility of determining "what shall we do tomorrow?"

The committee, which comprises department heads and assistants, no one of whom is more than 42 years old, is headed by Charles E. Ragland, assistant freight traffic vice-president. At least one all-day meeting will be held per month.

SUPERVISORS ARTICLES AVAILABLE AS REPRINT

The popular series of articles by George Daffern of the Canadian National, which ran in Railway Age under the general title of "The *Better* Supervisors Get *Promoted*," now is available in reprint form. The five articles in the series (February 27, p. 18; March 26, p. 22; April 30, p. 37; May 28, p. 37; and June 25, p. 60) make up a booklet of 28 pages.

Prices are: single copies, 60¢ each; in lots of 10, 55¢ each; in lots of 25, 50¢ each; and in lots of 100, 45¢ each. Please order from Managing Editor, Railway Age, 30 Church St., New York 7, N.Y. Make checks payable to Railway Age.

75,000th PS-1 Standardized Box Car

H. J. McKenzie, president of the Cotton Belt (left), receives a replica of the 75,000th PS-1 box car from C. W. Bryan, Jr., president of Pullman-Standard. The presentation in St. Louis July 16 marked the first stop for P-S's freight car standardization caravan (Railway Age, July 16, p. 5). The builder's line of standardized freight cars and components has been viewed by railroaders and shippers in St. Louis, St. Paul and Minneapolis in the past two weeks. The exhibit opens at Chicago's Grand Central Terminal for one week beginning July 30, followed by stops at Cleveland, August 9-10; Washington, D. C., Union Station, August 15-17; Philadelphia, 30th Street Station, August 22-24; and New York, 10th Avenue and 31st Street, September 11-13. Caravan marks decade of standardized cars.

4 Roads Had Passenger-Service Profit

Only four of the Class I line-haul railroads earned a net profit from their passenger-service operations in 1955. The four, and the 1955 passenger net in each case, are: New York Connecting, $445,000; Long Island, $205,000; Chicago & Illinois Midland, $2,000; Western of Alabama, $18,000.

This was shown in the latest issue of "Transport Economics," published by the ICC Bureau of Transport Economics and Statistics, which had a table showing the 1955 passenger-service results for all Class I roads. The table was an amplification of a compilation the bureau issued earlier to show like data for 37 large railroads (Railway Age, June 4, p. 12).

Passenger-service deficits shown in the present table ranged from the Bessemer & Lake Erie's $19,000 to the Pennsylvania's $49,976,000. The latter amounted to 42% of the PRR's 1955 net railway operating income from freight service, whereas the B&LE loss amounted to only 0.3% of its freight net.

Deficits from freight as well as passenger operations were reported by three roads—Canadian National Lines in New England, Canadian Pacific Lines in Vermont, and Pennsylvania-Reading Seashore Lines. Excluding these, the 1955 ratios of passenger-service deficits to freight service net railway operating incomes ranged from the B&LE's 0.3% to Staten Island Rapid Transit's 200.9%. Next highest ratio was the Chicago, St. Paul, Minneapolis & Omaha's 126.7%.

The bureau also published another table showing, for the 1936-1955 period, the miles of road operated

St. Paul Sponsors "Railroad Day"

Honoring the 100th anniversary of the arrival in St. Paul of Empire Builder James J. Hill, railroads serving the Twin Cities joined in celebration of Railroad Day on July 20. The observance, sponsored by the St. Paul Chamber of Commerce, included dedication of new ticket offices at St. Paul Union Station, an exhibit of new equipment by railroads and suppliers, and a special luncheon (above) at which the featured speaker was AAR President W. T. Faricy (Railway Age, July 23, p. 11).

in passenger service, passenger miles, and passenger train miles per mile of road per day. Between 1936 and 1955 the mileage operated in passenger service dropped 32.2% —from 177,928 to 120,630. Passenger miles dropped 26.2%, from 404.7 million to 298.8 million; and passenger train miles per mile of road per day rose 9.7%.

C&NW to Save by Leasing Omaha

A plan whereby the Chicago & North Western would lease and operate its subsidiary, the Chicago, St. Paul, Minneapolis & Omaha, was announced in Chicago last week. C&NW expects to save some $2 million annually by the leasing arrangement.

The C&NW owns 98% of the CStPM&O's preferred and common stock and all its bonds. Both properties are now operated as a common system.

Ben W. Heineman, chairman of the C&NW, said "there remain numerous economies and improvements in operations which can be effected only through the complete unification which would be achieved under operation of both properties by a single company."

The proposition will be submitted to the stockholders by both companies at special meetings, dates for which will be determined at the next scheduled directors' meetings of both companies on September 14.

The announcement pointed out out that the CStPM&O has experienced financial difficulties in recent years. The road is not only failing to earn its fixed charges, but during four of the last five years it has failed to earn depreciation and retirement charges. Earnings have been insufficient to permit adequate roadway and equipment maintenance, and to permit acquisition of sufficient rolling stock and motive power.

Under terms of the proposed lease, the C&NW would maintain and operate the properties at its own expense, furnishing all motive power, rolling stock, equipment and other materials, and retain all revenue. The North Western would in turn pay annual rentals to be determined under a formula designed to reflect the earning potential of the CStPM&O.

Arja Morgan Retires; With ICC 46 Years

Arja Morgan has retired from the Interstate Commerce Commission's staff where he was assistant director of the Bureau of Rates, Tariffs and Informal Cases, and chief of the bureau's Section of Informal Cases.

Mr. Morgan, who became 70 years old May 27, served with the commission 46 years. He joined its staff as a clerk in 1910.

New Haven Authorized to Raise Commutation Fares

The New Haven has been authorized by the Interstate Commerce Commission to increase its interstate commutation fares by amounts ranging, for various types of tickets, from 18% to slightly over 25%. The New York Public Service Commission has authorized the road to increase its intrastate commutation fares by 18½% to 22½%. Both increases are effective August 1. Where the new ICC-authorized rates are higher than those allowed by state authorities, the lower fare will be charged.

ICC Bureau Issues Railroad Cost Scales

The Interstate Commerce Commission's Bureau of Accounts, Cost Finding and Valuation has issued a statement showing railroad cost scales by territories as of January 1, 1956. It is Statement No. 5-56, and the data are based on 1954 operations, with adjustments to reflect wage and price levels as of January 1, 1956.

RR Gets Tax Reduction

Agreements calling for reductions of almost $270,000 a year in taxes payable by the bankrupt Hudson & Manhattan have been signed by the states of New York and New Jersey and New York City, Jersey City, N.J., and Hoboken.

Herman T. Stichman, H&M reorganization trustee, said "the taxes on our railroad have been substantially more than the balance available from railroad operations after paying railroad expenses and this action will reduce the deficit."

"These agreements were reached," he added, "because the taxing authorities made a business-like evaluation of the railroad's financial problems and its ability to pay a certain amount of taxes, and because they recognized that the reductions

were necessary in the interest of the communities which the railroad serves, and its riding public. . . . Without such sound business judgment and cooperation by the taxing authorities, they might have lost a very substantial amount of tax income, for if we had closed, any public authority which took over would have paid no taxes, and, in addition, the taxing communities would have had to subsidize the railroad's deficits."

New Truck Brake Rule Delayed

The Interstate Commerce Commission's new truck-brake regulation, which will require that air and vacuum reservoirs of towing vehicles be safeguarded against leakage, has been postponed until January 1, 1957.

It had been scheduled to become effective June 30 (Railway Age, July 1, page 37). The commission's postponement order was based on information that manufacturers could not supply necessary parts by the original effective date.

Organizations

American Institute of Cooperation, North Carolina State College of Agriculture.—Two panel discussions on transportation problems will feature the AIC's 28th annual session in Raleigh, N. C., August 1. "Shippers' Needs in Furthering Farm Progress" will be discussed at the morning session, and subject of the afternoon panel—moderator for which will be James K. Knudson, attorney and former Interstate Commerce Commissioner—will be "Carrier Achievements in Furthering Farm Progress." R. O. Lawhon, general agricultural and forestry agent of the Southern, will be a member of the afternoon panel.

Operations Research Society of America.—The 1956 annual meeting will be held in the Hotel Mark Hopkins, San Francisco, November 15-16. One feature of the meeting will be a session on "Operations Research in Transportation." Additional information is available from T. E. Oberbeck, c/o U. S. Naval Postgraduate School, Monterey, Cal.

Supply Trade

Bruce C. Gunnell has been appointed railroad representative of **T-Z Railway Equipment Company** in southeastern territory.

Robert L. Brown, Jr., assistant sales manager of gas, diesel and LP-gas powered industrial lift trucks, has been named electric truck sales manager by **Yale & Towne Manufacturing Co.**

Charles Gruet, northeast district representative, tractor equipment division, **Hyster Company,** has been promoted to manager of the New York sales office.

Railroading

After Hours

Impressing People Favorably

by James G. Lyne

Editor, Railway Age

George M. Crowson of the Illinois Central asked me a question a couple of years ago which I've not yet been able to answer. G. M. C., as most railroaders know, is one of the country's leading practitioners in the area of public relations—and his question certainly spotlights a perplexing problem in that realm. Here, in substance, is his question:

The railroads have lost a large part of the great number of direct public contacts they once had — by the diversion of so many passengers to other forms of transportation. What alternative can or should be developed to provide public realization of railroad existence and importance—recognition which came automatically when most travel was done by rail?

So far, the nearest substitute for a real answer that has come to me goes something like this: Not all the contacts the railroads had when everybody traveled by rail were favorable. Cannot the loss in quantity of such contacts, today, be considerably offset by an improvement in quality —that is, by making sure that passengers' contacts with the railroads are *always* the kind which will leave a favorable impression?

That's really not an adequate answer to G. M. C.'s query—maybe some readers can suggest a better one.

It is always the spectacular things—new equipment or new services—that "make the news" about railroad passenger service. But the things that make the news are not necessarily the things that make the friends. Dependable cleanliness and comfort in cars and stations, equally dependable courtesy, full information from employees about things that interest the passengers, on-time performance — it's the host of these little details, and not great big spectacular developments, it seems to me, that give people their opinions about the competence (or the contrary) of the railroads.

And, as most railroad people also know, the public does not distinguish clearly between railroads. One railroad's good performance (or its opposite) tends to be ascribed as an attribute to the entire industry.

"Railroad Wife"

There are many songs, headed by "Casey Jones," which record the contribution of masculine valor to railroad operation, but until a few days ago I'd never heard one which did similar honor to the distaff side. Now I have listened to a good one—it's called "The Railroad Wife," words and music by Mrs. John Murphy, wife of the PRR's manager of community relations. The song hasn't been published or recorded that I know of, but it deserves to be.

MAKING TEST DATA COMPLETE...

Practically all types of cars now roll on the new steel wheel...

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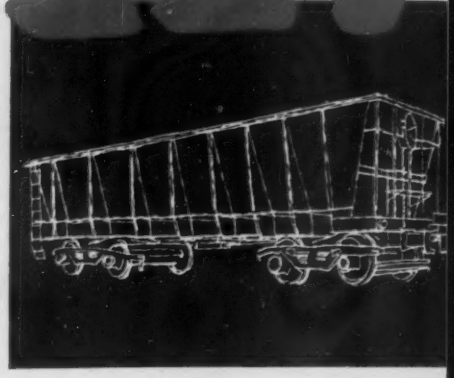

Fifty-five railroads are now using thousands of *new* Griffin EQS steel wheels... *under practically all types of service conditions.*

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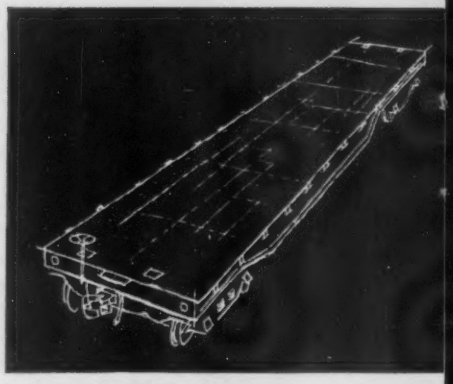

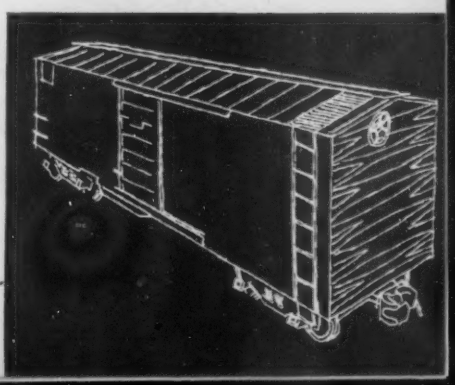

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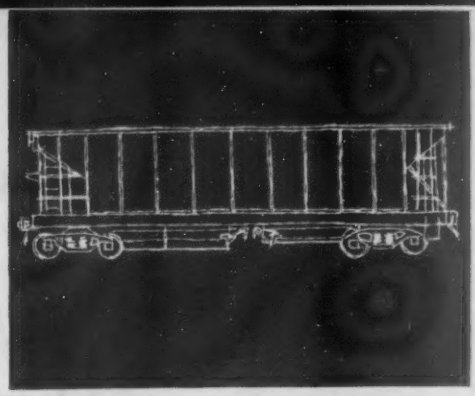
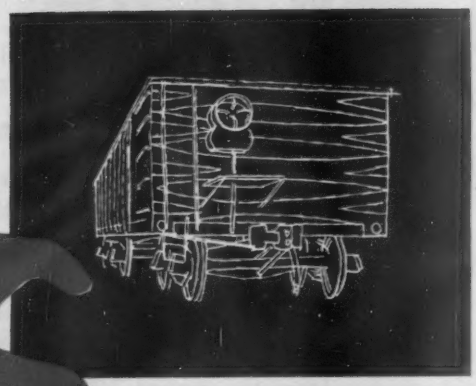
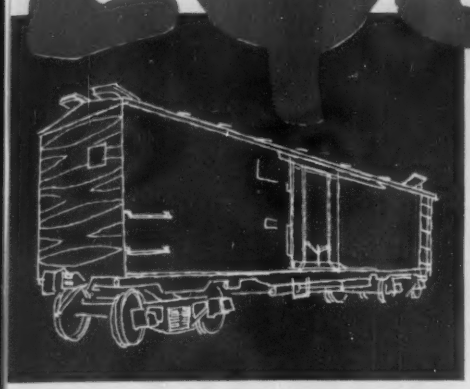
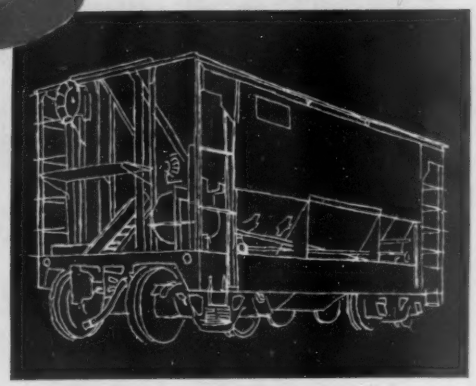


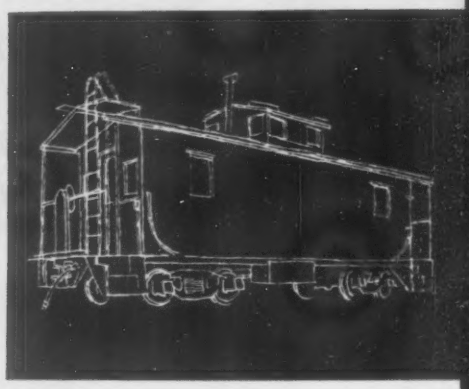


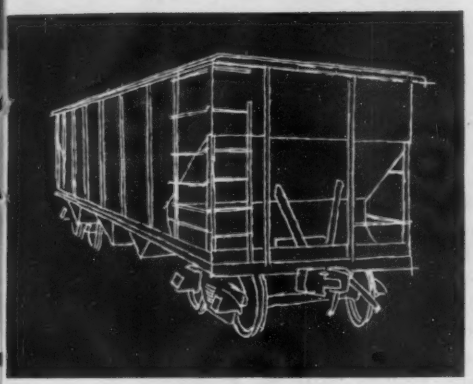
E.Q.S

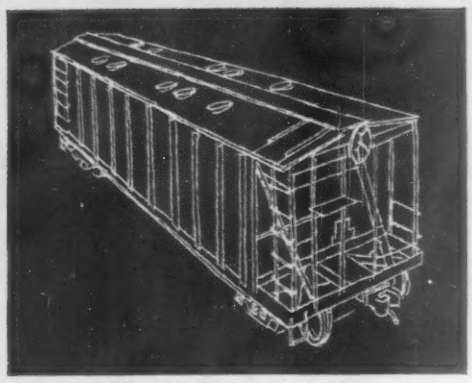
ELECTRIC QUALITY STEEL

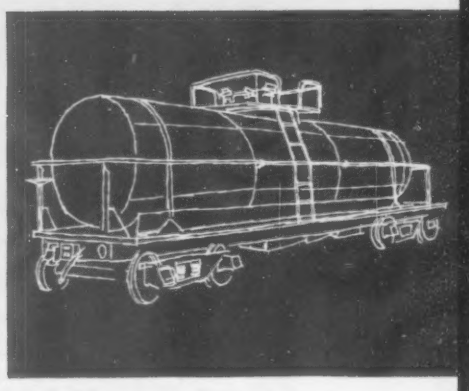


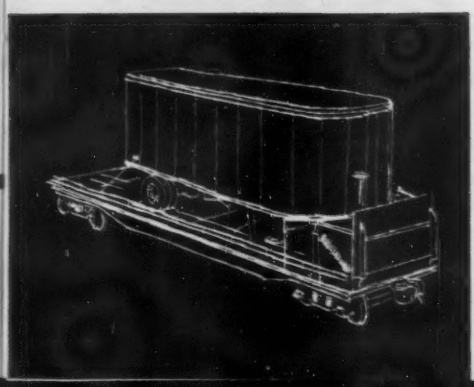












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Questions and Answers

Of current interest

to the Transportation Department

What has been your railroad's experience with electronic track scales for weighing cars in motion . . .

?

CONDUCTED By G. C. RANDALL, district manager, Car Service Division (ret.), Association of American Railroads, this column runs in alternate weekly issues of this paper, and is devoted to authoritative answers to questions on transportation department matters. Questions on subjects concerning other departments will not be considered, unless they have a direct bearing on transportation functions. Readers are invited to submit questions, and, when so inclined, letters agreeing or disagreeing with our answers. Communications should be addressed to Question and Answer Editor, Railway Age, 30 Church Street, New York 7.

Scale saves time—money

"We have a 94-ft electronic track scale at our Englewood yard, Houston, Tex. This scale was placed in service in December 1954. (See Railway Age, Jan. 30, 1956, p. 24.) We experienced some difficulty maintaining the scale at the beginning, partly due to our inexperience. But through constant cooperation of all the people involved, the motion electronic scale has proven to be one of the most successful installations on the Southern Pacific. Maintenance now consists of a scale mechanic spending a part of one day each week checkweighing two cars and cleaning dust from the electronic components. Occasionally the maintainer finds it necessary to change out a tube or make some other minor mechanical adjustment.

"The scale is maintained with 1/10 of 1% tolerance and is used for weighing all cars required to be weighed as they pass over the crest.

"We experienced a failure in the operation of this scale due to lightning damaging one of the load cells. It became necessary to put an engine and crew to work weighing cars continuously, and they could not keep up with the cars to be weighed. Most cars requiring weighing while the electronic scale was down missed their connections.

"As many as 400 cars are weighed each 24-hr period at Englewood. At the present rate, we expect the scale to have completely paid for itself by January 1958 by decreasing cost of weighing cars. This figure does not cover the most important feature of motion weighing; that is, the fact that cars are weighed and leave the terminal with no delay whatsoever as a result of having been weighed. This one feature justifies the cost of this modern equipment."—*R. A. Hostetter, general superintendent maintenance of way equipment and scales, Texas & New Orleans.*

Some maintenance difficulties

"Installation of these devices has been limited on our railroad to motion weighing at locations that would require experienced weighmasters if weighbeams were used. The Cadiz, Ohio, device is operated by a clerk who also operates the yard switches and works on the billing machines. The Conway, Pa., scale installation is on a hump with a 3% grade and the cars are moving at such a speed that it would be difficult to obtain weighbeam weights. (Railway Age, Jan. 23, 1956, p. 38.) It would be necessary to study the individual requirements of the installation before making any statements as to the economy of electronic weighing.

"The Cox & Stevens electronic weight indicator and printer on the 65-ft plate fulcrum track scale at the Georgetown coal preparation plant of the Hanna Coal Company near Cadiz was described in the Mar. 31, 1952, issue of Railway Age (p. 36). The other two sets we have are practically the same as the Georgetown scale except that they are on 92-ft plate fulcrum track scales on a 3% grade. One of these is in use on the westbound hump at Conway yard and the second set will be installed on the eastbound hump scale at the same place.

"Our troubles have primarily been development problems, but have been sufficiently serious to make us restrict the applications to the present three sets of equipment. Maintenance requirements are of such character that highly specialized service is needed. Until these maintenance requirements have been reduced to where unit replacements without extensive adjustments are possible, we would hesitate to install equipment of this nature in locations where specialized service is not easily obtainable. Our present maintenance service is done by the R.C.A. Service, except on the weighcells, which are replaced by our own people when necessary."—*J. P. Newell, vice-president, Pennsylvania.*

MORE RAILROADIANA AT BARGAIN PRICES

We still have a small amount of material to dispose of from our library. Included are bound July issues of the Official Railway Guide for 1939, 1940, 1941, 1944, 1946 and 1949-1955, inclusive, at $5 each postpaid.

Annual reports of a number of railroads, dating from the late 1890's through the early 1940's; almost all bound. Prices vary. Write for complete list. Examples: Chicago & North Western; 1897-1906; 1907-1913; 1914-1921; 1922-1931, $10. Pittsburgh & Lake Erie, 1905-1910; 1911-1920; 1921-1939, $7.50. Virginian, 1911-1916; 1917-1935, $5. All postpaid.

Bound volumes of Railway Age, various years, 1937-1955, $5 per volume, express collect. 1937-1951 bound editorial pages only, two volumes per year; 1952-1955, bound editorial and advertising pages, four volumes per year.

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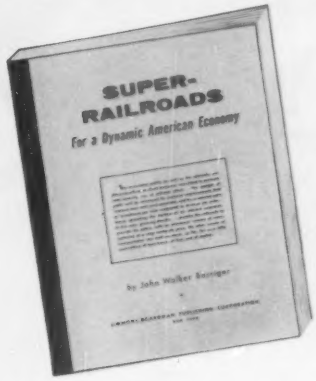
What IS the Railroads' Future?



This book tells specifically what prospects are . . .

Will the railroads grow as the country grows? Will railroads reinforce their dominant leadership in freight traffic . . . double or triple their passenger patronage? Railroad authority John Walker Barriger believes they can . . . and will!

He has written this new 90-page book to prove it. But there's a catch, an "if". The railroads can fulfill their future, he predicts, "only if railway men themselves believe in that future." So here is a book for believers. Here is proof the railroads can do it; here is a program to help you build your own and your industry's future. "Super-Railroads For Dynamic American Economy" is the most interesting and informative railroad book to see the light of day in 30 years. But it is more than that. It is a challenge to bold-visioned railroaders who believe their destiny is leadership.

How do you organize for "super-railroads"? Author Barriger first presents the tremendous problems the railroads face. Second, he points out that the way things are done today often doesn't jibe with the economic facts of life. Third, he shows what some revolutionary-minded railroad men have done and propose to do. And, finally he gives a complete blueprint for the industry's prosperity and growth.

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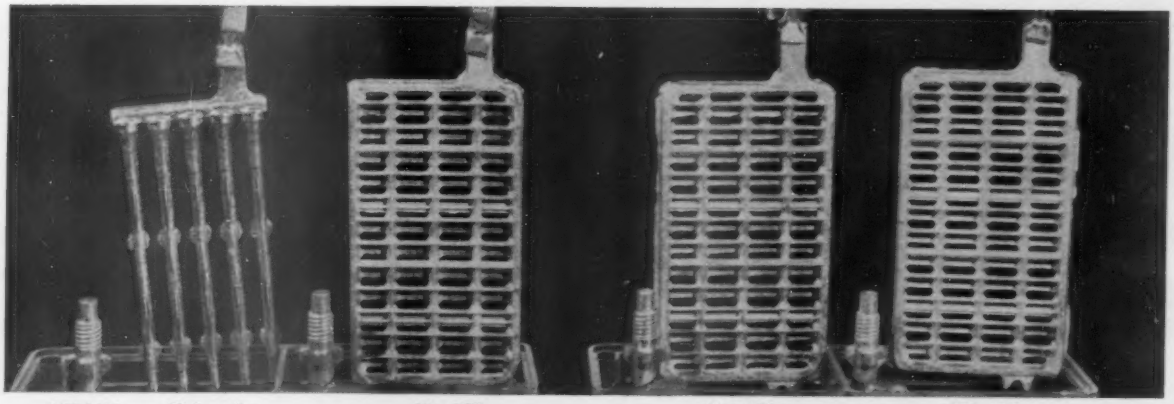
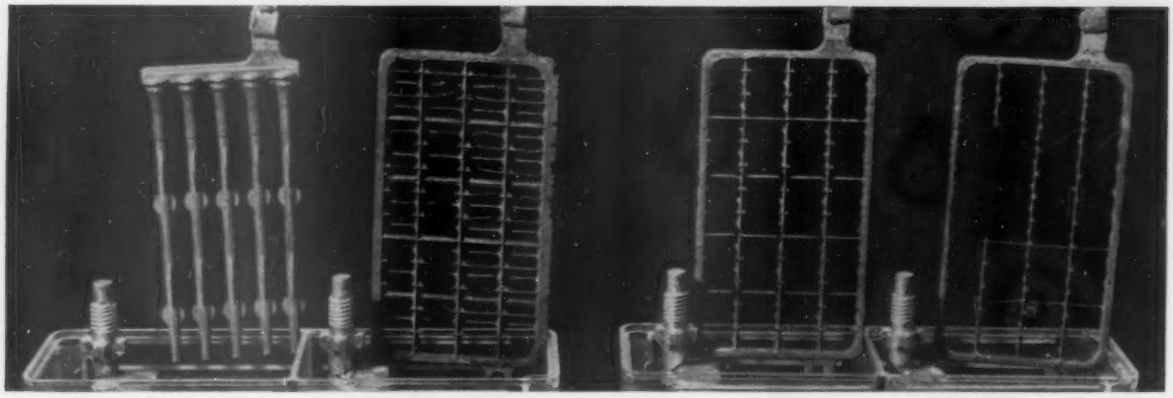


BEFORE: Silvium alloy — Alloy "A" — Alloy "B" — Alloy "C"



AFTER: Note how the Silvium grid resisted corrosion. Compare it with the other alloys.

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Selective Rate Changes Or "Across the Board"?

Some people seem to believe that "across the board" rate increases are, somehow, contradictory to the railroads' long-range program of "selective rate reductions," or "selective increases," designed to adjust railroad charges more realistically to competitive conditions in transportation.

Actually there is no necessary discord in these quite dissimilar approaches to rate-making. Disagreement, sometimes, does arise among railroad men over these two avenues toward protecting and improving earnings—but that is only because some tend to emphasize the importance of one or the other method, while ascribing little or no usefulness of the other.

For example—to consider one extreme viewpoint—there are some railroad men who are impatient with the complexity and immense volume of detailed study necessary to construct a system of rates which will maximize railroad traffic and net earnings in the movement of steel, or canned goods, or lumber, or coal, or meat, or hundreds of other important commodities. To such individuals, it seems easier and more practical to accept *present* rates and the tonnage of *the railroad proportion* of the total traffic in each important commodity as "given." When a sudden need for $100 million or $400 million of added revenue develops (usually as the result of a sharp rise in wage or material costs), these people see the problem as a very simple one: You just boost each and every rate by the percentage which *theoretically* would, in the aggregate, produce $100 million or $400 million of additional revenue. When you have done this, you then forget all about the rate structure until, six months or a year later, you are again confronted with another sudden increase in expenses—at which time you resort once more to the expedient of another percentage increase "across the board."

Another Extremist Viewpoint

That is one extremist position. There is another extremist position at the opposite pole, viz., the opinion that any percentage treatment of rates is unrealistic and likely to "price the railroads out of the market." Some adherents of this school seem to believe, even, that *any* increase in freight rates is of doubtful propriety—and that what the railroads need to do more than anything else is to "get rid of the passenger deficit."

This paper is convinced that the long-run solution to the railroads' problem of adequate earnings—and, hence, of the industry's future as private enterprise—depends upon retailoring railroad rates, commodity by commodity, to meet the realities of competition. Almost any rate pattern which looks much the same (except for being higher) than it was 25 years ago ought to be suspect *for the very reason that it hasn't changed much.*

Total railroad tonnage a generation ago presented no difficulty. The big rate-making problems then lay in achieving and maintaining favorable market and commodity relationships—while, of course, providing adequate total revenue. Today, the rate-makers have lost all their former power to maintain market and commodity relationships. With unregulated truck transportation easily available to every shipper or receiver of freight in the United States—and with toll-free, regulation-free barge service also available to anyone within reach of a river—the railroad rate-makers (either on the railroads or on regulatory commissions) cannot enforce what they believe "ought to be" in the way of rates.

Rate Goal Has Changed

The rate-maker's job today has become vastly more complex than it was. He should know what the total available tonnage is of each commodity—and he can no longer get this figure by merely looking at railroad tonnage. He will have to develop a lot of new and ingenious ways of getting hold of figures on total "potential" tonnage. He needs to know a great deal about the cost to the shipper of alternative methods of transportation, as well as a lot about specific costs of rail movement, under varying conditions of operation. The revolution in transportation conditions has made the rate man's job more important than ever.

There are some who conceive of methodical study of rail and competitive costs, total potential tonnage and the like, as having as its primary or sole objective the reduction of railroad rates to attract more traffic. Such studies, however, will undoubtedly also develop a great many situations where railroad rates are unjustifiably low—either from the standpoint of the cost of moving the traffic or from that of competitive conditions, or both.

Long-range study of costs and markets cannot possibly meet the sudden need which periodically confronts the railroads, as well as other industries, to offset sharp increases in costs. Such emergencies require emergency remedies—and the "across the board" percentage increase is the only such remedy which works quickly enough to prevent acute starvation while painstaking revisions based on market analysis develop patterns which more closely conform to the economic facts. But "across the board" increases may well be viewed with some suspicion, unless they are accompanied by intensive analysis and other systematic and aggressive efforts to adapt rates to a permanently changed competitive and cost enviroment.

What's the Life of a Diesel?

ECONOMIC LIFE OF A LOCOMOTIVE CAN BE PREDETERMINED

By H. F. BROWN
Consulting Engineer
Gibbs & Hill

Railroads use locomotives for just one purpose—to move traffic. It is the function of management to see that this is done with the lowest possible charges to operating expense. Otherwise, earnings are impaired. Management, therefore, should be interested only in the economic life of its motive power, and not in how long the equipment will last.

Length of economic life is not a matter of opinion or conjecture, but can be determined accurately by simple mathematical reasoning. Ralph P. Johnson, formerly chief engineer of the Baldwin Locomotive Works, in his book, "The Steam Locomotive," has demonstrated that if obsolescence does not occur first, economic life depends on just two factors:

(1) The rate at which equipment is amortized and (2) the rate at which maintenance costs increase with age of equipment.

These factors apply equally to any kind of motive power or equipment.

In the final analysis, the only real determinant is the rate of rise in maintenance costs, since the amortization rate depends, or should be made to depend, on the service life calculated to be the economic life. Mr. Johnson has shown that if equipment is retired prior to this age, the higher amortization rate is a waste of capital, and if equipment is continued in service beyond this age, the higher repair costs constitute an actual addition to operating expense.

Railroads are required by the Interstate Commerce Commission to charge to "Operating Expenses, Account 331," sums of money for depreciation of diesel equipment applicable to the accounting period. Rule 24 a, of the prescribed "Uniform System of Accounting for Steam Railroads," specifies how depreciation shall be computed. Rule 24e requires railroads to keep such records for computation of new depreciation rates to take the place of any found to be inaccurate.

These rules in themselves warrant a precise appraisal of the economic life of the diesel locomotive, which at present is only estimated, and allowed by the ICC to be 20 years for road diesel units and 25 years for yard switchers.

Depreciation rates can be represented graphically, as in Fig. 1. The curve does not mean that any unusual rates are being used for a fast write-off in the early years. It indicates only that as the period of service life increases, the *average annual* depreciation charge to "Account 331" decreases. The straight line method specified in Rule 24 a, or any other method, may be used for our purpose. The curve shows, for example, that for a 10-year life, 10 per cent of the cost of the unit will be the average depreciation charge for each year of the period, assuming no salvage value.

Repair Costs

It is clear that the life, and the depreciation rate based on that life, cannot be determined by this curve alone.

All repair costs for "Motive Power Other Than Steam," by ICC ruling, must be charged into "Operating Expense, Account 311."

Repair costs rise with the age of the equipment, at least for the first six or eight years. Even those who contend that diesel motive power costs will eventually level off admit that repair costs show an increase each year, at least until the first heavy repairs occur between the sixth and eighth year.

Theoretically, it is possible to show that as the number of cycles of heavy repairs increases, the rate of rise of maintenance costs over total elapsed life may lessen. This causes some to believe that maintenance costs will eventually level off or become stabilized.

The factor overlooked in this theory is that the economic life has been determined, and reached, usually before the second cycle of heavy repairs, if the cost of the first heavy repairs have been properly charged to Account 311. If these costs, or the costs of rebuilding, exceed 50 per cent of the replacement cost new of the unit, then the original unit must be retired and charged to the depreciation reserve. In either case, the economic life has been shortened.

All cost units based on such things as mileage, rating or horsepower, fuel consumption and tons hauled, are required basically for just one purpose: To tell operating management whether motive power is, or is not, delivering its maximum possible service performance, consistent with traffic and schedules, during each time period.

The dollars alone, charged into Account 311 each year, when adjusted to a stable value of the dollar, and for the same service performance, will show whether or not maintenance costs are rising as the equipment becomes older. Such costs must be carefully related to units of the same age group performing the same service. Repair costs of passenger units 10 years old, making 300,000 miles per year, cannot be averaged in with similar costs for freight units three years old making 100,000 miles per year.

Allowances also must be made for increased costs due to increased service requirements, as well as for decreased costs due to curtailment of maintenance because of more stringent financial conditions. It is important that all these factors be considered in determining annual maintenance costs.

Such costs may be shown and plotted in percentages of the original cost of the unit, and a straight trend line calculated to show the rate of rise, as in Fig. 2. Most railroads today have had enough years of experience and sufficient data to calculate such trend lines.

Having determined the trend line, a similar straight line with one-half

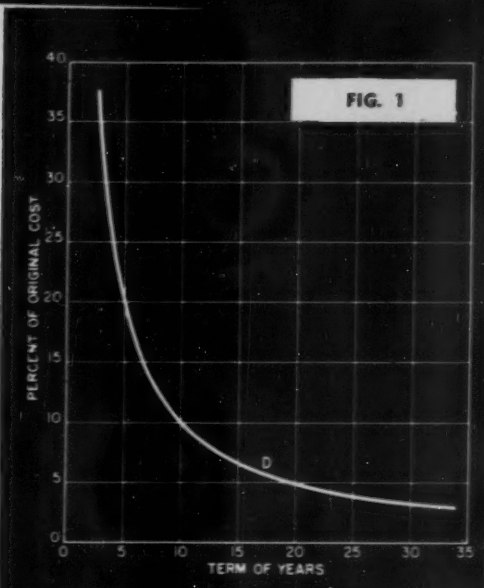


FIGURE 1

Here is an average annual depreciation rate in terms of per cent of first cost for any term of years. This curve is for 100 per cent write-off, with no salvage value. Similar curves can be drawn for any other write-off percentage for salvage value desired.

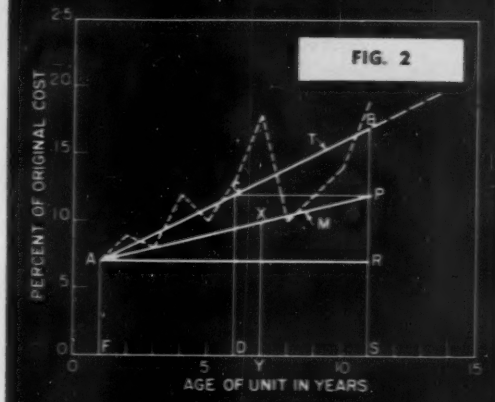


FIGURE 2

Annual maintenance costs in terms of per cent of first cost.
Broken line is plot of annual costs adjusted to value of stable dollar.
AB is calculated trend, T.
BR/AR is annual rate of rise of T.
CD is average maintenance cost for AR years, and is equal to PS.
XY is average maintenance cost for FY years.
AP is trend of average maintenance costs, M, for any group of years, for rate of rise T.
M has one-half the slope of T.

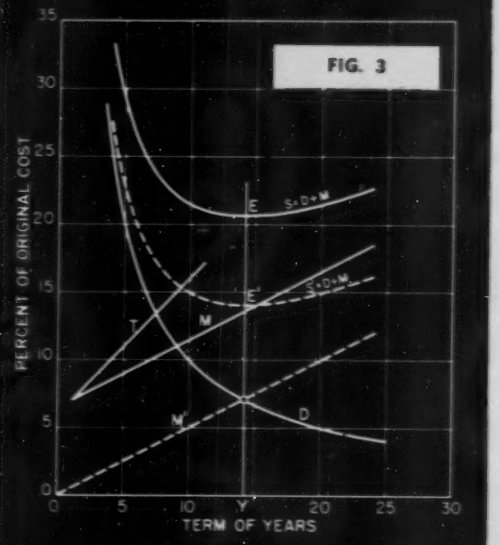


FIGURE 3

Summation of depreciation and maintenance charges, in terms of per cent of first cost.
D is the depreciation curve from Fig. 1.
T is the trend of maintenance costs having rate of rise in per cent as determined in Fig. 2.
M is the trend of average maintenance costs for any term of years, with ½ the slope of T.
S is summation curve of D and M.
E is the lowest point on curve S. This occurs in year Y. In this year, the annual average of the sum of all costs is at a minimum. Before this year these costs are falling. After this year, they are rising.
Y is the year terminating the economic life.
M^1 is line having same slope as M, drawn through O.
S^1 is summation of M^1 and D. This curve has same shape as S, and same time value of E^1 as E.
M^1 intersects D directly under E and E^1, in year Y.
The intersection of M^1 with D defines the economic life.

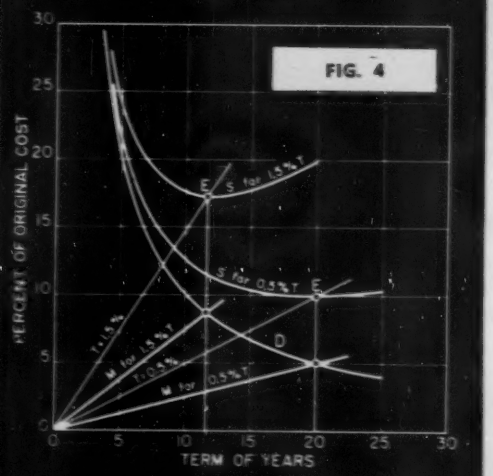


FIGURE 4

Geometrical proof that economic life is determined by rate of rise of maintenance costs.
By construction, the low point in any summation curve S is at the year value where M and D intersect. Then M and D have equal per cent values at this time value, and the value of E in per cent is always twice the value of either M or D.
Then a line drawn through O and E will have twice the slope of M. By definition, M has ½ the slope of the trend line of rate of rise in maintenance costs, T.
Therefore, OE is T, and will always intersect the summation curve of D and M at the low point E, defining the economic life.

CONTINUED ON NEXT PAGE

the slope of the trend line, as shown also on Fig. 2, will indicate the *average maintenance cost per year* for any desired group of years. This *average* line is now comparable with the depreciation curve shown in Fig. 1, and may be combined with it for comparable values of age of equipment.

When both depreciation and maintenance costs are reduced to the same cost units and combined, a U-shaped curve is produced which has a minimum cost value at a definite age value (see Fig. 3). This minimum point, E on the diagram, defines the economic life.

The slope of the line M of *average* maintenance costs per year alone determines the shape of the summation curve, S, and the time location of the point E. This line may be moved up or down on the diagram without affecting the shape of S or the location of E as to time, provided the slope is not changed. When this line is drawn through O it intersects the depreciation curve D directly under E, in the year Y which terminates the economic life.

The steeper the slope of the average maintenance costs M, the deeper will be the shape of the summation curve S, and the shorter will be the economic life (see Fig. 4).

A high rate of rise in maintenance costs establishes the economic life more definitely than a low rate of rise. In Fig. 4, the two S curves show approximately the same average rise in annual costs for equipment continued in use for two years beyond E for 1.5 per cent rise, as for five or six years beyond E for 0.5 per cent rise. Study of Fig. 4 will also show that just as the M line always intersects the D curve in the same year, indicated by E, so will a line drawn through O having twice the slope of M (which is, by definition, the trend line T or rate of rise of maintenance costs) always intersect the S curve at E, thus proving the mathematical tie between the economic life and the rate of rise in annual maintenance costs. Thus, to determine E, the S curve need not be computed. All that is required is the intersection of the straight line M, drawn through O, with the curve D.

Because this study has for its purpose the development of means for determining the economic life, and since this can be determined by the intersection of a straight line, drawn through O, representing the rate of rise in maintenance costs, with the depreciation curve shown in Fig. 1,

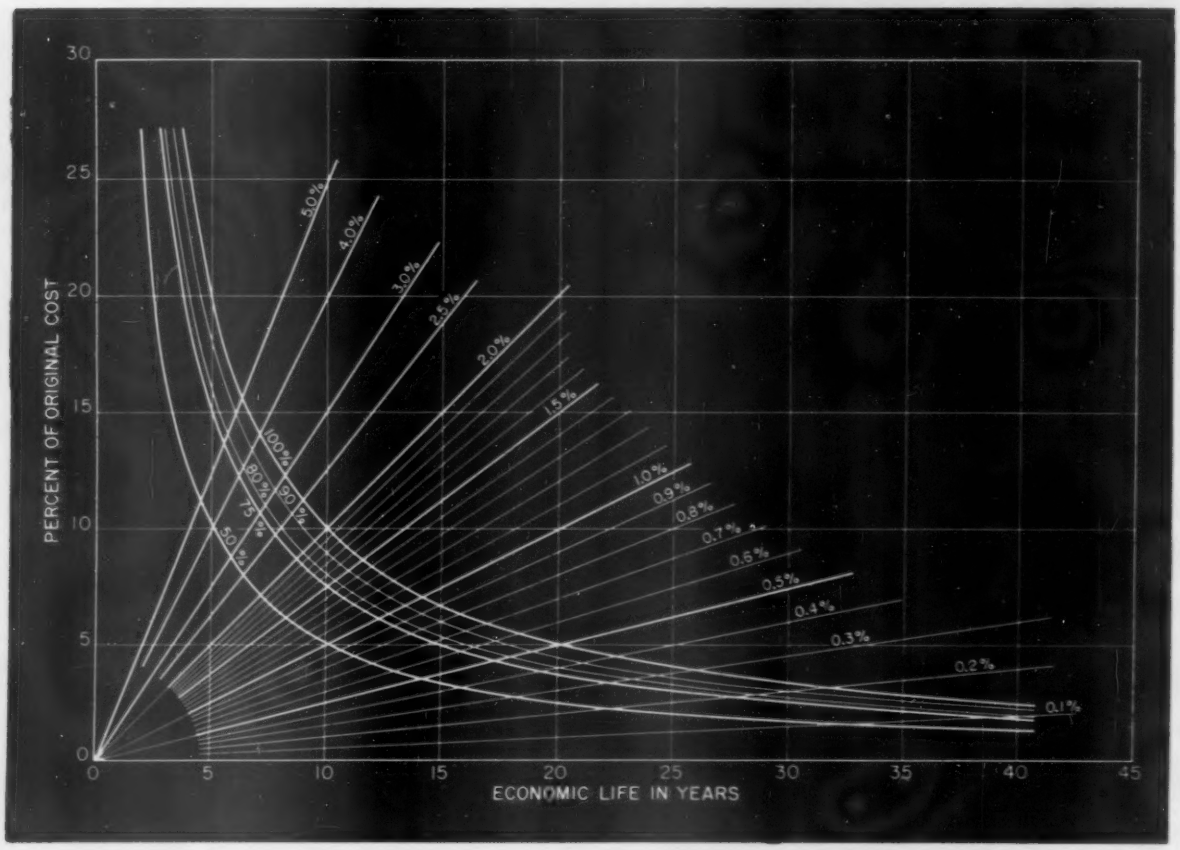


FIGURE 5

For various values of annual rate of rise of maintenance costs expressed in terms of per cent of first cost (straight lines), and for various values of salvage after depreciation, i.e., 100 per cent depreciation (no salvage value), 90 per cent, 80 per cent, 75 per cent and 50 per cent depreciation with 10 per cent, 20 per cent, 25 per cent and 50 per cent salvage value, respectively (curved lines). The intersection of any maintenance cost rate line with any depreciation curve gives the economic life of a diesel.

it is now possible to add to Fig. 1 a series of straight lines, also drawn through O, representing various rates of rise of maintenance costs, together with several depreciation curves, representing various salvage values, and to construct the chart shown in Fig. 5. If the rate of rise of maintenance costs of any equipment is known or can be determined, in per cent of its original cost, and this rate continues over a sufficient period of years, the economic life may be determined from the factors indicated on this chart.

Rebuilding Costs

It should be noted that this chart does not include the maintenance cost for the first year which is A F in Fig. 2. It will be seen that A F has no bearing on the slope of either the T line or the M line.

Recent records show that diesel units which have made more than 1,000,000 miles have been rebuilt between their 12th and 15th years at costs upward of 70 to 90 per cent of their original costs. Such amounts are too large to be properly charged to Account 311 under ICC accounting rules and must be accounted for by retiring the unit and capitalizing the rebuilding costs. Thus the units should have been depreciated down to salvage value by the time they are to be rebuilt. The balance remaining of 10 to 30 per cent could be regarded as salvage value in such cases. On this basis, Fig. 5 indicates that units having rates of rise of maintenance costs as low as from 0.8 to 1.3 per cent per year should be retired between the 12th and 15th years. A unit having a rate of rise of 2 per cent per year, would, if rebuilt, have an economic life of only 9 years, on this basis.

It may be asked: **How can a railroad afford to scrap such expensive equipment after so short a life; and what will be the economic result of continuing these units in service beyond the indicated economic life period to the full 20 years now estimated to be the useful life?**

Assume, for example, that a unit has had one cycle of heavy repairs, is now 10 years old, and has a rate of rise of maintenance costs of 2 per cent per year. The chart indicates that this unit should now be retired, but it is felt necessary to continue the unit in the same service to the 20th year by annual maintenance costs which can be charged to Account 311. It is possible to show that the rate of rise of maintenance cannot decrease, on this basis, and will continue its previous rate of 2 per cent, at the very least.

Fig. 5 shows the comparative financial penalty incurred by continuing this unit in service beyond the economic life. The straight line marked 2 per cent on the chart intersects the (interpolated) 96 per cent depreciation curve (which allows a 4 per cent salvage value) at approximately 9.8 years, and each has a cost value at this time of 9.8 per cent. Thus, the sum of the average depreciation and maintenance costs shown on the chart at that time is 19.6 per cent, which is the average annual amount charged to operating expense for 9.8 years, for those two items.

Carrying out the 2 per cent maintenance rate on this chart to the 20th year indicates an average annual charge for maintenance for each of these years of 20 per cent. For a 20-year life, the depreciation rate has dropped to 4.8 per cent (for a 4 per cent salvage value), so the sum of these two charges will now average 24.8 per cent per year for the 20-year period, charged to operation. This is 5.2 per cent more per year, over the 20-year period, than would have been paid had the unit been retired in its 10th year and a new unit purchased.

In this example, if the unit is retired at the end of the 10th year, for a 20-year period, the investment has been made twice and recovered twice, and the maintenance costs shown on the chart have not exceeded 10 per cent per year average. This is a total of 400 per cent charged to operation over 20 years.

If the unit is retired at the end of the 20th year, the investment has been made once and recovered once, but maintenance has averaged 20 per cent per year for these 20 years, without including more than the first cycle of heavy repairs. This is a total of more than 500 per cent charged to operation over the 20-year period. In this case, more than the cost of a new unit has been paid for out of operating costs, but never received or utilized to reduce operating expense.

In both cases the original capital investment has been kept unimpaired by charges out of operation into Account 331, which is the purpose of this account. In both cases also, the maintenance cost during the first year, which is A F in Fig. 2, has been omitted. It can be shown, that if included, it would cancel out in the above comparisons.

Fig. 5 indicates that no equipment has an economic life of 20 years unless the annual rate of rise of maintenance costs is less than 0.5 per cent per year. Examination of numerous data on diesel maintenance indicates rates of rise between 1 per cent and 2 per cent per year, which in turn indicate the economic life to be between 10 and 14 years, a startling consumption of capital.

This is not out of line with the recorded experience with this type of equipment of this age, to date; nor does it appear probable that any type of internal combustion equipment yet designed can materially improve upon this record. To avoid this capital consumption by continuing the operation greatly beyond the indicated economic life can be a much greater tax on earnings, as the annual reports of some railroads are beginning to show.

Establishing Depreciation

No more economical type of motive power than the diesel is immediately within the reach of most railroads. **Surely railroads operating equipment having an economic life so much shorter than now estimated, should apply for, and use, more realistic depreciation rates, and have them accepted by the ICC and the Internal Revenue Department, and avail themselves of any assistance which can be received from higher tax deductions, as well as lower operating charges.**

In conclusion, nothing herein is to be construed as favoring one type of motive power over another. This is primarily a discussion of the basic factors determining and applicable to the economic life of all types. The method of combining depreciation rates and maintenance costs is not original with the writer. These factors, once defined, will determine the economic life, and that determination, when properly made, is no more debatable than the multiplication table.

ACCORDING TO NEW TIMKEN STUDY . . .

Roller Bearings Will Pay Their Way

Improved performance and maintenance economies said to justify freight car bearing investment on both new and rebuilt cars

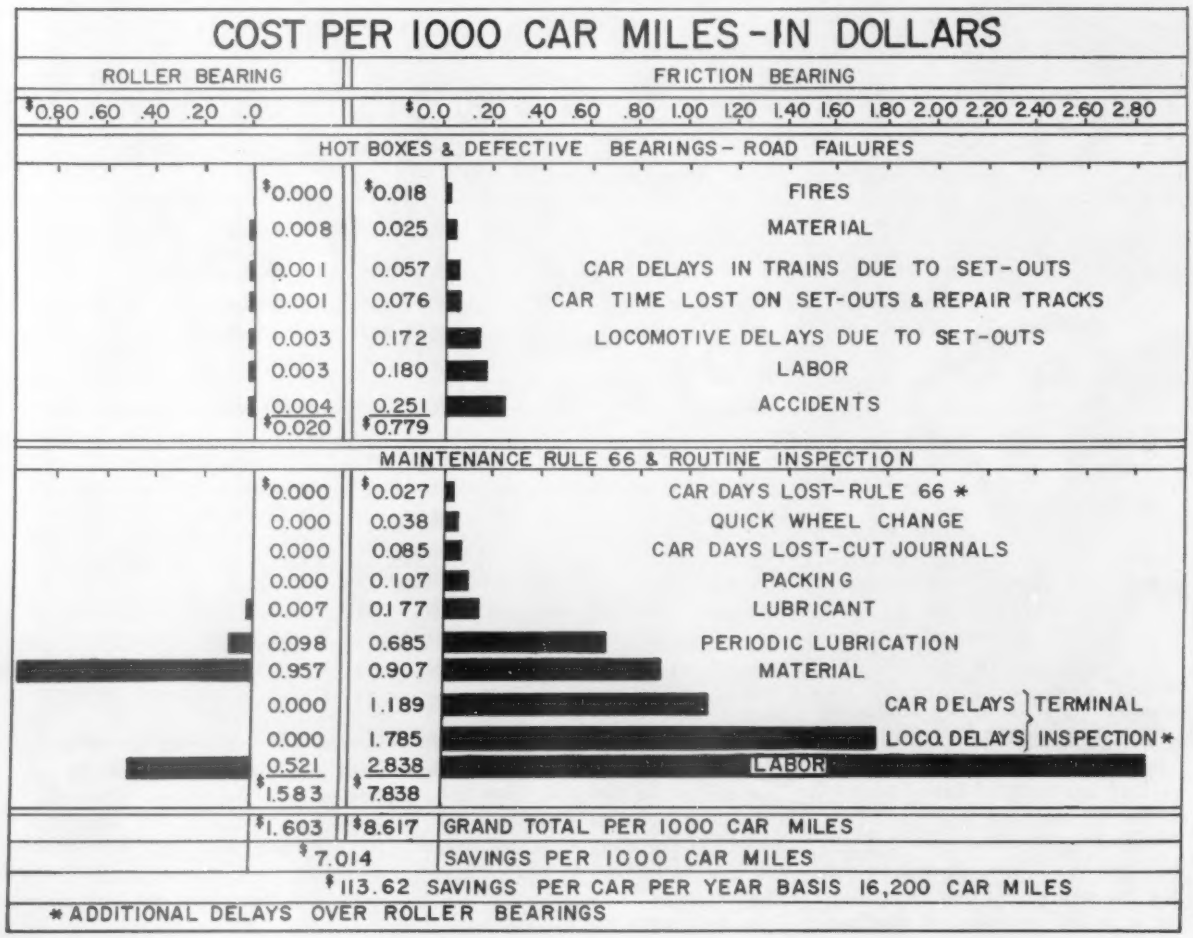
To increase profits from freight car operation—that is the one ultimate objective in equipping freight cars with roller bearings, according to the Timken Roller Bearing Company. A Timken study argues that the objective may be achieved with a substantial return on the additional investment needed to equip all freight cars with roller bearings.

Savings with roller bearings are said to be possible from many sources, among which are:

• Lower hot box rate; lower bearing failure rate; lower maintenance cost; increased car availability and reduced car ownership; quick wheel change saving with pedestal type side frames; saving in locomotive hours; better safety record (less accidents and no fires); reduced switching costs; reduced locomotive fuel costs; elimination of tonnage reductions in cold weather; less loss and damage to lading; reduced coupler and draft gear maintenance; centralized wheel and axle shops; better relations with shippers; fewer schedule delays; higher speed operation and decreased scheduled terminal

19% RETURN ON ROLLER BEARING INVESTMENT

Per Thousand Car Miles . . .


COST PER 1000 CAR MILES - IN DOLLARS
ROLLER BEARING
FRICTION BEARING
$0.80 .60 .40 .20 .0
$0.0 .20 .40 .60 .80 1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80
HOT BOXES & DEFECTIVE BEARINGS - ROAD FAILURES
$0.000 $0.018 FIRES
0.008 0.025 MATERIAL
0.001 0.057 CAR DELAYS IN TRAINS DUE TO SET-OUTS
0.001 0.076 CAR TIME LOST ON SET-OUTS & REPAIR TRACKS
0.003 0.172 LOCOMOTIVE DELAYS DUE TO SET-OUTS
0.003 0.180 LABOR
0.004 0.251 ACCIDENTS
$0.020 $0.779
MAINTENANCE RULE 66 & ROUTINE INSPECTION
$0.000 $0.027 CAR DAYS LOST-RULE 66 *
0.000 0.038 QUICK WHEEL CHANGE
0.000 0.085 CAR DAYS LOST-CUT JOURNALS
0.000 0.107 PACKING
0.007 0.177 LUBRICANT
0.098 0.685 PERIODIC LUBRICATION
0.957 0.907 MATERIAL
0.000 1.189 CAR DELAYS } TERMINAL
0.000 1.785 LOCO. DELAYS } INSPECTION *
0.521 2.838 LABOR
$1.583 $7.838
$1.603 $8.617 GRAND TOTAL PER 1000 CAR MILES
$7.014 SAVINGS PER 1000 CAR MILES
$113.62 SAVINGS PER CAR PER YEAR BASIS 16,200 CAR MILES
* ADDITIONAL DELAYS OVER ROLLER BEARINGS

layovers; decreased dead weight; and reduced wheel slip.

Although all these items are of economic importance, according to Timken, figures in this study reflect savings for only the first seven. Difficulty in assigning dollar values to the remaining items has prevented their inclusion in calculations.

This study largely supplants an earlier paper, "Economics of Freight Car Roller Bearings."[1] Basic precepts of the earlier study have been retained, but the new study is based on the Timken AP (all-purpose) roller bearings. Prices and costs in effect during the first half of 1955 have been used, and operating statistics are mainly 1954 figures.

[1]By O. J. Horger. Presented to Railroad Division, American Society of Mechanical Engineers at the annual meeting, November 28, 1951. Published in Railway Age, Jan. 7, 1952, p. 63 and Feb. 4, 1952, p. 85.

RETURN ON INVESTMENT FOR THE ADDITIONAL COST OF ROLLER BEARINGS

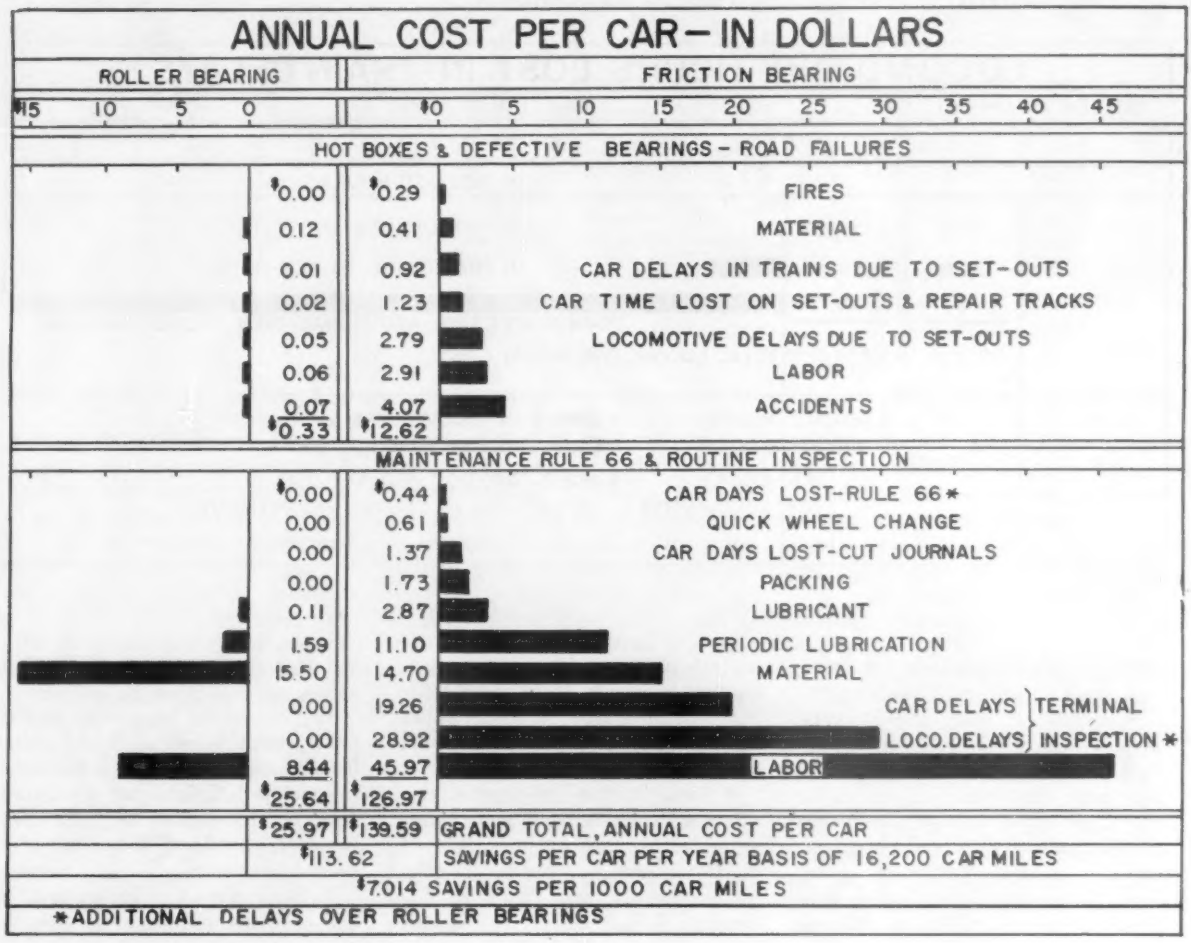
Application	Roller Bearing Saving Annually Per Car	Additional Investment Over Friction Bearings Per Car	Return Based on Accounting Method	Return Based on Discounted Cash Flow or Investors' Method: Assuming No Delay Between Purcase Date and Revenue Service Date	Return Based on Discounted Cash Flow or Investors' Method: Assuming 3 Months Delay Between Purchase Date and Revenue Service Date
To new cars $650.00 price	$113.62	$571.32	19.9%	19.8%	18.9%
To existing cars $650.00 price	$113.62	$596.07	19.1%	19.0%	18.1%
To new cars $560.00 price	$115.20	$481.32	23.9%	23.9%	22.6%
To existing cars $560.00 price	$115.20	$506.07	22.8%	22.7%	21.5%

Annual savings per car resulting from Universal use of roller bearings are $113.62, based on prices and costs in effect during the first half of 1955, and on an annual average mileage of 16,200 miles per car. The equivalent saving per thousand car miles is $7.014. The savings per thousand car miles could be useful for railroads having annual car experience other than 16,200 miles.

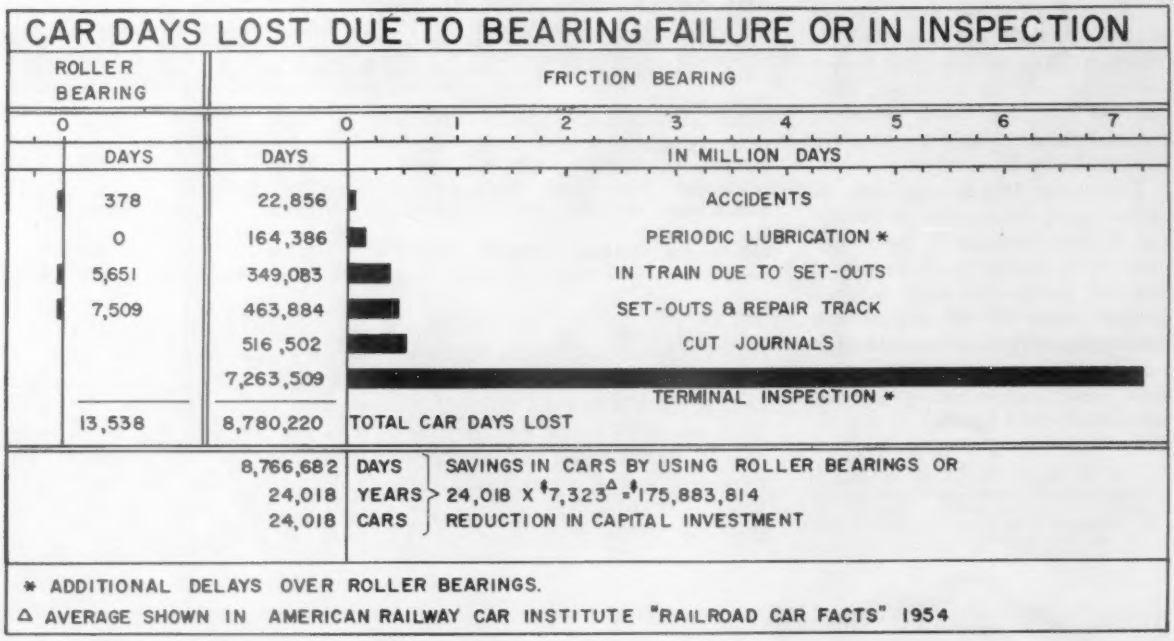
While, in general, higher mileages produce greater savings, the study does not conclude that low mileage operations are not profitable for roller bearing cars. Important applications which are independent of annual car mileage, and which have

WITH THESE FIGURES

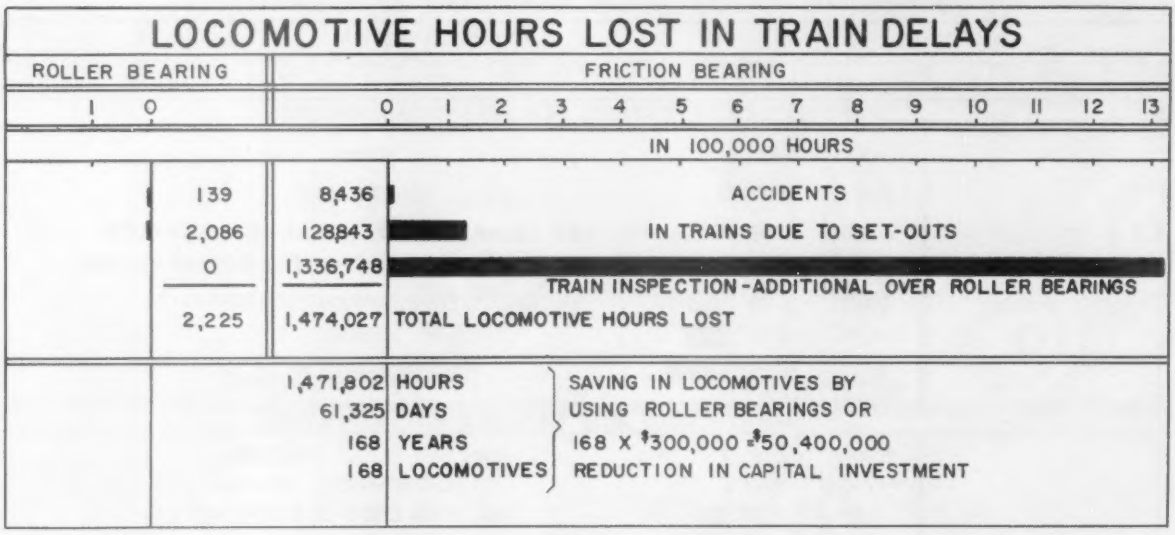
Per Year at 1955 Costs . . .


ANNUAL COST PER CAR—IN DOLLARS
ROLLER BEARING
FRICTION BEARING
$15 10 5 0
$0 5 10 15 20 25 30 35 40 45
HOT BOXES & DEFECTIVE BEARINGS - ROAD FAILURES
$0.00 $0.29 FIRES
0.12 0.41 MATERIAL
0.01 0.92 CAR DELAYS IN TRAINS DUE TO SET-OUTS
0.02 1.23 CAR TIME LOST ON SET-OUTS & REPAIR TRACKS
0.05 2.79 LOCOMOTIVE DELAYS DUE TO SET-OUTS
0.06 2.91 LABOR
0.07 4.07 ACCIDENTS
$0.33 $12.62
MAINTENANCE RULE 66 & ROUTINE INSPECTION
$0.00 $0.44 CAR DAYS LOST-RULE 66*
0.00 0.61 QUICK WHEEL CHANGE
0.00 1.37 CAR DAYS LOST-CUT JOURNALS
0.00 1.73 PACKING
0.11 2.87 LUBRICANT
1.59 11.10 PERIODIC LUBRICATION
15.50 14.70 MATERIAL
0.00 19.26 CAR DELAYS TERMINAL
0.00 28.92 LOCO. DELAYS INSPECTION*
8.44 45.97 LABOR
$25.64 $126.97
$25.97 $139.59 GRAND TOTAL, ANNUAL COST PER CAR
$113.62 SAVINGS PER CAR PER YEAR BASIS OF 16,200 CAR MILES
$7.014 SAVINGS PER 1000 CAR MILES
*ADDITIONAL DELAYS OVER ROLLER BEARINGS

$175 MILLION AND 24,000 CARS WOULD BE SAVED . . .


CAR DAYS LOST DUE TO BEARING FAILURE OR IN INSPECTION
ROLLER BEARING
FRICTION BEARING
0
0 1 2 3 4 5 6 7
DAYS
DAYS
IN MILLION DAYS
378 22,856 ACCIDENTS
0 164,386 PERIODIC LUBRICATION *
5,651 349,083 IN TRAIN DUE TO SET-OUTS
7,509 463,884 SET-OUTS & REPAIR TRACK
516,502 CUT JOURNALS
7,263,509 TERMINAL INSPECTION *
13,538 8,780,220 TOTAL CAR DAYS LOST
8,766,682 DAYS
24,018 YEARS
24,018 CARS
SAVINGS IN CARS BY USING ROLLER BEARINGS OR
24,018 X $7,323Δ = $175,883,814
REDUCTION IN CAPITAL INVESTMENT
* ADDITIONAL DELAYS OVER ROLLER BEARINGS.
Δ AVERAGE SHOWN IN AMERICAN RAILWAY CAR INSTITUTE "RAILROAD CAR FACTS" 1954

. . . ALONG WITH $ 50 MILLION AND 168 LOCOMOTIVES


LOCOMOTIVE HOURS LOST IN TRAIN DELAYS
ROLLER BEARING
FRICTION BEARING
1 0
0 1 2 3 4 5 6 7 8 9 10 11 12 13
IN 100,000 HOURS
139 8,436 ACCIDENTS
2,086 128,843 IN TRAINS DUE TO SET-OUTS
0 1,336,748 TRAIN INSPECTION-ADDITIONAL OVER ROLLER BEARINGS
2,225 1,474,027 TOTAL LOCOMOTIVE HOURS LOST
1,471,802 HOURS
61,325 DAYS
168 YEARS
168 LOCOMOTIVES
SAVING IN LOCOMOTIVES BY
USING ROLLER BEARINGS OR
168 X $300,000 = $50,400,000
REDUCTION IN CAPITAL INVESTMENT

attracted initial customers for large and small quantities, include:

- Industrial type freight cars such as hot metal, slag and cinder cars. Low maintenance requirements have been attractive.
- Specialized service cars such as those in pulpwood and phosphate service. Service, although short haul, is usually over inaccessible single tracks where bearing failures are difficult to service and bring operations to a halt. Unbalanced loading conditions find cars with roller bearings less susceptible to occasional overloads.
- Cars in low mileage service often work in isolated and widely separated regions where work load is insufficient to justify bearing maintenance forces. With friction bearings, it is necessary to dispatch maintenance men to these loading points.

The return on investment is the dollar saving in operation and maintenance expense for the roller-bearing-equipped freight car compared with the friction-bearing car. The investment is the additional cost of a roller-bearing car.

Various rates of return up to 23.9 per cent can be obtained, depend-

AN ESTIMATED BREAK DOWN OF SAVINGS

Item No.	Description of Items	All Freight Cars Equipped with Friction Bearings: Total Annual Cost*	Friction Bearings: Annual Cost* Per Car	Friction Bearings: Cost* Per 1,000 Car Miles	Roller Bearings: Total Annual Cost*	Roller Bearings: Annual Cost* Per Car	Roller Bearings: Cost* Per 1,000 Car Miles
1.	Repairing Hot Box Set Outs	$ 16,279,553.31	$ 8.26	$0.510	$ 491,943.09	$ 0.25	$0.015
2.	Damage to Equipment - Overheated Journals Broken	8,024,639.49	4.07	0.251	132,569.08	0.07	0.004
3.	Fires Due to Hot Boxes	577,167.00	0.29	0.018	0.00	0.00	0.000
4.	Cut Journals Found During Routine Inspection and Periodical Repacking	8,937,206.27	4.53	0.280	..	..	..
5.	Defective Bearings Found During Routine Inspection Other than Wheel Renewal and Periodical Repacking	5,913,560.29	3.00	0.185	..	..	..
6.	Periodical Lubrication Per AAR Interchange Rules 66 and 66-A	21,887,793.85	11.10	0.685	3,141,195.28	1.59	0.098
7.	LABOR - Not Included in Items Above:						
	A. Routine Transportation Yard Inspections and Service Attention	80,490,194.87	40.82	2.520	11,664,693.60	5.91	0.365
	B. Cleaning and Repacking Journal Boxes - Wheel Defect Removals	1,788,319.80	0.91	0.056	..	..	..
	C. Applying Spring Packing Retainers	170,337.20	0.08	0.005	..	..	..
	D. Turning Journals - Wheel Defect Removals	1,451,215.71	0.74	0.046	0.00	0.00	0.000
	E. Nine-Year Roller Bearing Inspection	..	..	..	4,983,319.60	2.53	0.156
8.	MATERIAL - Not Included in Items Above:						
	A. Defective Bearing Replacements	11,623,941.84	5.90	0.364	19,166,613.86	9.72	0.600
	B. New Axles (Replacements)	6,612,481.77	3.35	0.207	8,145,810.88	4.13	0.255
	C. Journal Box Oil	5,667,195.14	2.87	0.177	..	..	..
	D. Prepared Packing	3,412,333.65	1.73	0.107	..	..	..
	E. Journal Box Lids	2,952,115.00	1.50	0.092	..	..	..
	F. Spring Packing Retainers	909,770.99	0.46	0.028	..	..	..
	G. Journal Bearing Wedges	589,114.76	0.30	0.018	..	..	..
	H. Journal Box Dust Guards	511,737.26	0.26	0.016	..	..	..
	I. Journal Box Dust Guard Plugs and Cement	80,800.62	0.04	0.003	..	..	..
	J. Solvent	85,893.50	0.04	0.003	159,721.78	0.09	0.005
	K. Journal Coating	31,991.52	0.02	0.001	..	..	..
	L. Coolant	175,693.96	0.09	0.006	..	..	..
	M. Roller Bearing Grease	..	..	..	216,902.18	0.11	0.007
GRAND TOTALS		$178,173,057.80	$90.36	$5.578	$48,102,769.35	$24.39	$1.505
	Total Annual Difference						
	Additional Savings				130,070,288.45	65.97	4.073
	Car Time				38,847,889.67	19.70	1.216
	Locomotive Time				57,025,669.28	28.92	1.785
	Quick Wheel Change				1,209,346.42	0.61	0.038
	Total Annual Savings				$227,153,193.82	$115.20	$7.112

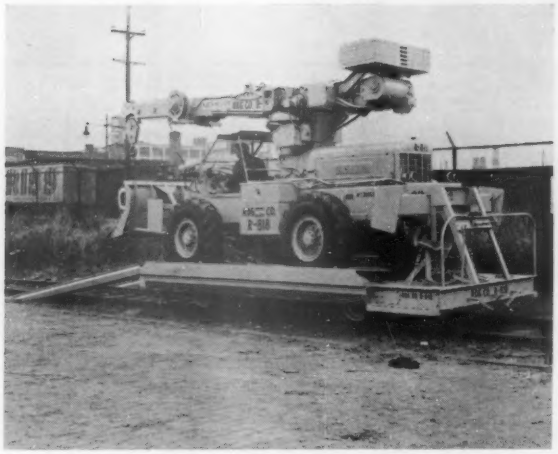
*Costs are based on 31,944,356,429 total freight car mileage for year 1954, as shown in AAR Annual Hot Box Statistics, and an average of 16,200 miles per year for freight cars and on a unit cost of $560.

ing upon the assumptions adopted. Two methods of calculation are used. The first is the familiar accounting method where the saving is merely divided by the investment. In the second method, called the "discounted cash flow" or "investors" method, the rate of return is computed as the maximum interest rate which could be paid on capital tied up over the life of the investment without dipping into earnings produced elsewhere in the company. The latter method has gained wide acceptance in industry for measuring the economic worth of investment projects.

The column headed additional investment over friction bearings per car in the tabulation on page 27 under the head "Return on Investment" represents the difference in cost between friction and anti-friction bearing applications. It should be noted that the net outlay for roller bearings is considerably less than the price of the roller bearings. The reason, of course, is that there are credits for friction bearing expenditures which are not made when the car is equipped with roller bearings.

The two prices for roller bearings in that table are based on present and higher level production. The $650 per car set was that in effect for the Timken AP 5½ by 10-in. bearing assembly and wedge on August 15, 1955. The $560 per car set is estimated for the same unit on the basis of production of 50,000 car sets per year over a ten-year period.

Since July 1, 1955, labor costs have increased, resulting in higher prices for both roller- and friction-bearing materials. Because of the greater labor expense in the operation and maintenance of friction bearing cars, each increase in labor rates increases commensurately the advantage of roller-bearing-equipped freight cars. It has been calculated by Timken that the upward movement of labor and material costs since July 1, 1955, would have spared American railroads more than nine million dollars in labor and material costs had all freight cars been equipped with roller bearings. Translated into savings per car for the year 1954, $4.80 more could be added to the $113.62 yielded in the study.



ON TRACK, the crane, with ramps in place, is ready to dismount from its on-track propulsion car.

OFF TRACK, the track car is secured on a special highway trailer, coupled to the crane, and is ready for highway.

A "Custom-Tailored" Crane

The Reading teams up with manufacturers to develop a versatile unit which performs multiple maintenance operations

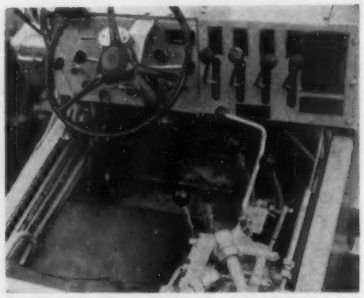
"If you don't see what you want—ask for it." This age-old retailers' adage was recently put to profitable use by the Reading.

Samuel E. Haines, Jr., the road's former supervisor of maintenance and work equipment, decided he'd like to be able to perform a variety of maintenance jobs with a single crane. Listing requirements for such a unit, he realized it should be an off-track—on-track machine, preferably with a telescoping boom, able to operate clamshells, hooks, magnets, backhoes and dragline. A bulldozer blade, he reflected, would also be a valuable accessory.

Not as Fast—But Faster

Unable to find what he wanted on the market at the time, he and engineers of the Stewart Equipment Company and the Austin-Western Company put their heads together and came up with the crane pictured on this page—a unit capable of performing all desired functions, plus a few extras.

Results to date are reported as excellent. Says Mr. Haines: the new crane "is not as fast as the regular crawler crane in a ditching job—but can get to the job faster. . . . It has the advantage . . . that once at the working site is can work from track or ground. It is not as fast as the normal rail crane in bucket work, but it can reach under the pole lines with a telescoping boom. It does the work of several machines and is designed to take complete care of electrified territory."



VERSATILITY of the crane is apparent from the maze of controls in the cockpit.

TELESCOPING BOOM with working platform allows loose concrete to be removed from overhead bridge.

Railway Officers

FRISCO TRANSPORTATION COMPANY.—Ralph C. Bryant, general manager and supervisor of motor transportation, promoted to vice-president and general manager, with headquarters as before at Springfield, Mo.

GREAT NORTHERN. — Otto Holmquist appointed superintendent ore docks at Allouez, Wis., succeeding **T. J. Greene,** retired.

George V. Guerin, assistant chief engineer, Seattle, appointed chief engineer, St. Paul, succeeding **R. R. Manion,** who has joined the **New York Central** (Railway Age, July 23, p. 16). Mr. Guerin's successor is **L. G. Reichert,** district engineer for eastern lines at Duluth, Minn., who in turn is replaced by **B. G. Anderson,** principal assistant engineer for western lines at Seattle. **W. G. Eschwig,** office engineer for western lines at Seattle, replaces Mr. Anderson, and in turn is replaced by **K. E. Wychoff,** Kalispell division engineer at Spokane. **B. H. Iseminger,** Kalispell division instrumentman at Spokane, named to succeed Mr. Wyckoff.

GULF, COLORADO & SANTA FE.—Lawrence Cena appointed acting trainmaster at Temple, Tex., replacing **E. E. Baker,** assigned to other duties.

GULF, MOBILE & OHIO. — J. N. Ogden, general solicitor, Mobile, appointed general counsel there, succeeding the late **D. S. Wright,** vice-president and general counsel.

J. H. Walkmeyer, assistant general freight traffic manager, Mobile, appointed general freight traffic manager there. Mr. Walkmeyer's successor is **C. S. Gregory, Jr,** assistant general freight agent, New Orleans. **E. B. Kelly** appointed assistant freight traffic manager, New Orleans.

ILLINOIS CENTRAL.—Howard S. Powell, Jr. appointed assistant general freight agent, St. Louis, succeeding **W. R. Scruggs,** promoted (Railway Age, June 25, p. 70-72).

Lexie B. Harper, manager of safety at Chicago, appointed rules examiner there, succeeding **Albert S. Pitzer,** who retired June 30.

John F. Belt, attorney in the land and tax department, promoted to assistant land and tax commissioner, Chicago.

Leonard L. King, general purchasing agent at Chicago, retires July 31.

Roy E. Lorentz and **Earl Oliver,** assistant managers of personnel, promoted to managers of personnel.

INDIANAPOLIS UNION. — Leo F. McGrath, trainmaster, appointed superintendent to succeed **W. H. McKitrick,** who retired July 1.

JERSEY CENTRAL. — Harvey G. Stewart, chief clerk, car accountant office, appointed car accountant, Jersey City, N. J.

Adam J. Haggerty, traveling freight claim investigator, appointed freight claim agent at New York, succeeding **Herman P. Klinsman,** retired.

KANSAS CITY SOUTHERN.— Robert R. Estes, commercial agent, Baton Rouge, La., appointed general agent, Little Rock, Ark., succeeding **Hugh R. Lamb,** transferred to Philadelphia.

Guy H. Dougherty, assistant district traffic manager, Washington, D.C., has retired.

LACKAWANNA. — Andrew M. Bimson, assistant to vice-president, appointed executive assistant to the president, New York, succeeding the late **Joseph G. Ward.**

LEHIGH & HUDSON RIVER. —D. G. Bainbridge, general freight agent, Warwick, N.Y.; **W. J. Fitzgerald,** New England traffic manager, Boston; **R. E. Cashen,** district freight agent, Boston; **John Crossman,** western traffic manager, Chicago; **J. M. Hart,** general agent, New Haven; **M. J. Loydon,** eastern traffic manager, New York; and **Emile Theodore,** general freight agent, Pittsburgh.

LEHIGH VALLEY. — R. E. Springer, water inspector, appointed engineer of tests, Sayre, Pa., succeeding **J. G. Hoffman, Jr.,** resigned.

MILWAUKEE. — Charles W. Reynolds, buyer at Seattle, appointed assistant purchasing agent there.

N. H. McKegney, assistant superintendent, appointed superintendent, Trans-Missouri division, with headquarters as before at Miles City, Mont. **D. O. Burke,** trainmaster, Rocky Mountain division, Deer Lodge, Mont., transferred to Miles City. **F. A. Barton,** trainmaster, Idaho division, Spokane, Wash., succeeds Mr. Burke, and in turn is replaced by **G. W. Mealey,** transferred from Sioux City, Iowa.

MISSOURI PACIFIC.—Floyd E. Fletcher, assistant superintendent, Little Rock division, McGehee, Ark., appointed superintendent, DeQuincy division, succeeding **R. H. Dollar,** promoted to assistant to the general manager, Gulf district, Houston. Mr. Fletcher's successor is **William L. Fagan,** trainmaster, Palestine, Tex., who in turn is succeeded by **Mark H. Cunningham,** transferred from Mart, Tex. **W. M. Adams,** assistant trainmaster, Gurdon, Ark., replaces Mr. Cunningham. **B. J. Cranford,** assistant trainmaster, Lake Charles, La., appointed trainmaster at St. Louis, replacing **G. T. Graham,** transferred to Chester, Ill.

Wendell Fields, division engineer, Palestine and San Antonio divisions, promoted to district engineer, Gulf district, Houston, to replace **F. S. Schwinn,** retired. **Athol K. McKeithan, Jr.,** assistant division engineer, DeQuincy division, succeeds Mr. Fields, and his former position abolished. **Chester S. Colvin** named division engineer, DeQuincy division, replacing Mr. McKeithan.

A. C. Peterson appointed tax auditor, St. Louis.

SOUTHERN.—John A. Rust, chief engineer, maintenance of way and structures, appointed general manager, eastern lines, with headquarters as before at Charlotte, N.C. A photograph of Mr. Rust appeared in Railway Age, February 13, p. 50. **Henry R. Moore,** superintendent, Somerset, Ky., will succeed Mr. Rust as chief engineer, maintenance of way and structures, Charlotte, and he, in turn, will be succeeded at Somerset by **John B. Singleton,** whose post as superintendent at Hattiesburg, Miss., has been assigned to **James A. Johnston,** formerly trainmaster, Greensboro, N.C.

OBITUARY

Dr. Daniel Boone Moss, 84, retired chief surgeon of the **Burlington,** died July 21 at Palmyra, Mo.

George V. Guerin

Henry R. Moore

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Technically trained man, 26-35 years, with mechanical or electrical degree, having at least five years' railroad experience in connection with the operation and maintenance of mechanical and electrical equipment of cars and locomotives. The ability to prepare technical reports and articles for publication is a necessity, and the man selected will be given an opportunity which will pay him a good salary while being trained. This job requires traveling in the western United States, with headquarters in Chicago. If you are interested, tell us about yourself and your experience. Your reply will be held confidential. Address Box 800, Railway Age, 30 Church St., New York 7.

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For lasting, all-weather protection, use Esso RUST-BAN 373

Esso Rust-Ban 373 gives equipment complete protection from corrosion in one fast application. More and more railroads are finding it ideal for stored parts such as axle journals and other heavy machined parts which may be stored outdoors for extended periods.

Esso RUST-BAN 373 offers four important advantages:—

1. No heating is required in applying Rust-Ban, permitting speedy application at normal temperatures by dip, spray or brush.

2. Its high resistance to abrasion means one coat lasts longer. The extremely durable coating of Rust-Ban safeguards equipment even after rough handling.

3. It dries to a hard film that is unaffected by rain and direct sunlight. And to withstand low temperatures, Rust-Ban contains special additives to prevent cracking and chipping. This all-weather protection keeps surfaces corrosion-free, saves expensive part replacements.

4. Economy is provided by excellent coverage – about 350 square feet per gallon. And Esso Rust-Ban 373 is easily removed by any good petroleum solvent such as Varsol.

Esso Rust-Bans are available in several types to meet every preservative need. *For more information,* write: Esso Standard Oil Company, Railroad Sales Division, 15 West 51st St., New York 19, N. Y.

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RAILROAD PRODUCTS

Esso offers a complete line of dependable railroad products – Valuable years of experience in research and development, along with continual testing on the road and in the lab, stand back of the outstanding performance of Esso Railroad products.

The taper makes TIMKEN® the only journal bearing that delivers what you expect when you buy a roller bearing

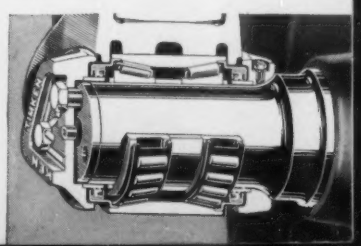
THERE are only two reasons for putting freight car journals on roller bearings: 1) To end the hot box problem, and 2) To cut operating and maintenance costs to a bare minimum. The Timken® tapered roller bearing is the only journal bearing you can depend on to do both these jobs. It's the taper. And here's why:

(1) *Positive roller alignment.* The taper in Timken bearings holds roller ends snug against the rib, where wide area contact keeps rollers properly aligned. Full line contact is maintained because rollers can't skew.

(2) *No lateral movement within the bearing.* Because of the taper, there's no lateral movement to pump lubricant through the seal. Lubricant does not leak out of the journal box and onto the rails causing costly diesel locomotive wheel slip. Costly lubricant is saved, lubricant replacement cost cut. And because there's no lateral movement, there's no scuffing of rollers and races to shorten bearing life.

Unlike costly "crutch" devices that merely attempt to improve friction bearing performance, Timken bearings eliminate the *cause* of hot boxes—the friction bearing itself. And Timken bearings bring operating and maintenance costs down to rock bottom. Timken bearings cut terminal bearing inspection time 90%. They reduce lubricant cost as much as 95%. Fact is, the new Timken heavy-duty type "AP" (All Purpose) journal bearing assembly will go three years without the addition of lubricant. These are the reasons why 7 out of 10 roller bearing freight cars roll on Timken bearings, why more and more railroads are going "Roller Freight".

Be sure you get Timken tapered roller bearings. They're the only bearings that deliver what you expect when you buy roller bearings to end the hot box problem and cut operating and maintenance costs to a minimum. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

7 out of 10 roller bearing freight cars roll on TIMKEN tapered roller bearings

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